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SLEEPING SICKNESS.

DUKE (Lyndhurst). **A Discussion on** *Trypanosoma rhodesiense.*—*Parasitology*. 1926. Jan. Vol. 18. No. 1. pp. 67–73. [2 refs.]

The author writes that BRUMPT has done him good service by criticizing certain of his views on the epidemiology of sleeping sickness; he says that some of BRUMPT's criticisms are unanswerable, others can be met, and still others rest upon a misunderstanding of his various contributions on the affinities of the polymorphic trypanosomes.

In this article Duke attempts to meet some of BRUMPT's criticisms and to remove certain misconceptions for which he does not desire to be held responsible. He takes in turn the formal conclusions in BRUMPT's paper [this *Bulletin*, Vol. 21, p. 748] and considers the evidence and inferences brought forward in their support.

Conclusion I. That *T. rhodesiense* is a good species.

Duke is unable to accept BRUMPT's reasoning based on the figures obtained from the epidemic of *rhodesiense* in the Mwanza area on the one hand, and TAUTE and HUBER's human inoculation with nagana on the other, from which it was concluded that *T. rhodesiense* and *T. brucei* are different species. According to Duke's view, the stimulus necessary to induce *T. brucei* to cultivate man as a host was lacking in TAUTE's experiments.

In the Mwanza area conditions were quite different. A serious famine, influenza, and ankylostomiasis had paved the way for a reduction of the game and thrown the man-loving *G. swynnertoni* into extremely close contact with a debilitated native population. Duke's contention is that the famine and influenza, aided no doubt by ankylostomiasis, paved the way for *T. brucei* to obtain a footing in man, and that these debilitating influences were intimately associated with an increased attack on man by hungry tsetses, whose normal food supply —the wild game—had been greatly reduced by indiscriminate hunting.

The great receptivity of man at the time of Duke's visit two years later was due to the adjustment of the parasite to man during the interim. By this time the trypanosome had become thoroughly humanized, possibly even to the extent of becoming cyclically transmissible from man to man by tsetse.

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Conclusion 2. Classification of trypanosomes ought to be based on all their characters, both morphological and biological.

Duke agrees to this, but considers that in the case of *T. brucei* and *T. rhodesiense* the balance of the "ensemble" of all biological (morphological and physiological) characters favours the conclusion that the two are only strains of varieties of a single species.

Conclusion 3. The natural immunity of certain species of hosts to natural infection is a character of great value, and constitutes in the absence of others an excellent criterion for distinguishing certain species.

Duke thinks that the little we know on this point does not justify an employment of this test as a criterion of species.

Conclusion 4. It seems to BRUMPT difficult to admit of the existence of rapid biological transformation of trypanosomes in Africa within a few years.

This, as Duke says, is merely a statement of opinion, and as a matter of fact such biological transformations as those postulated have actually been witnessed in his laboratory in the course of a few years.

Conclusion 5. The mechanical transmission of the trypanosome of man in Africa does not afford explanation of the gravity of certain epidemics, a gravity which depends in part, as in the case of diseases not transmitted by intermediate hosts, on certain factors which constitute for ancient authors the "génie épidémique," which we are still incapable of actually determining, and, in part, on the absence of immunity in populations newly subject to infection.

Duke considers that direct transmission does afford an explanation —not necessarily a correct one—of the gravity of certain epidemics, and that his explanation serves as a useful working hypothesis.

Conclusion 6. In this BRUMPT states that much remains to be done and with this Duke agrees.

[It is impossible in a short summary to do justice to this very interesting paper, which should be consulted in the original.]

W. Yorke.

CARPENTER (G. D. Hale). **Report by the Senior Medical Officer i/c Sleeping Sickness for 1924.**—*Uganda Ann. Med. & San. Rep. for Year ended 31st Dec., 1924.* pp. 70–76. With 1 fig.

The author reports that during the early part of the year he visited Gulu, in May Central Kavirondo, in July Buvuma Island, in September and October Lake Albert and the Busoga Coast, and in November and December the Eastern Province.

As a result of his observations, he states that generally speaking sleeping sickness is under control, but that much remains to be done in the Northern Province to which an additional sleeping sickness medical officer has now been appointed. A brief reference is made to the treatment of natives by "Bayer 205" and tryparsamide; favourable results were apparently obtained with both drugs.

Carpenter considers the increased movement of labour is liable to result in spreading sleeping sickness, particularly in the case of recruits from Gulu and Chua. It seems inevitable that sooner or later an infected native from the Northern Province will come into contact with *Glossina palpalis* on Lake Victoria, and it is therefore of the utmost importance that clearings be adequately maintained and extreme care be taken by patrolling Lake Victoria that no fisherman escapes a biennial examination, so that no infective person comes into contact

with a fly at places where there are no clearings. So far as is known *Glossina morsitans* is still uninfected with human trypanosomes.

There follow a few remarks on the position in each infected area. In the Victoria Nyanza area, the whole situation requires close examination ; there is no doubt that restrictions have been relaxed to the limit of safety, and that while no cases of sleeping sickness have yet been detected among the repatriated inhabitants, it must be expected that infection will be introduced from other parts of Uganda or from Kavirondo. Although sleeping sickness is at present quiescent in Kavirondo it is yet a constant danger to Uganda, as fishermen from Kavirondo constantly make use of Uganda waters and probably bring fish to Jinja.

Carpenter believes that Kenya should introduce some system of control of fishermen similar to that in Uganda ; unless this is done there is every probability that infection will spread from Kavirondo to Buvuma and thence to other islands.

It has not been possible to visit the Victoria Nile area during the year, nor has a complete tour of the Mpologoma area been possible, but the situation was discussed with the District Commissioners ; only four deaths are known to have occurred from sleeping sickness during 1924, among the 10,034 people near the swamp. The population is thinly distributed and it is proposed to issue instructions to concentrate those actually within the boundary of the infected area.

Since the Siroko Valley area was last visited in 1921, considerable developments have taken place ; the area under cultivation has increased enormously and there is now a ginnery on the Siroko river. In November the area was visited and the people called for examination ; no case of sleeping sickness was discovered.

Carpenter was unable to visit Katwe and Bwamba area this tour. The parts of the coast of Lake Albert in the Bunyoro area, which were opened for repopulation in 1922, were re-examined in September. The results, which are given in a table, show that three cases of sleeping sickness were found amongst 1,280 persons examined. It was not found possible to visit the Nile infected area. Returns by Chiefs persistently gave no deaths from sleeping sickness, but it is doubtful if this represents the true state of affairs. The area has not been visited since 1922 ; people are very afraid of gland puncture and until a medical officer is appointed, who can work regularly in the sleeping sickness area and obtain their confidence, no progress can be made.

The Acholi, East Madi, and West Madi areas of the Gulu district were thoroughly examined in January and February. The people in the Acholi area were very reluctant to come up for examination. In certain places it was decided to remove the population away from contact with *G. palpalis*. There seemed reason to hope that practically all the deaths which occurred in 1924 were due to infection contracted before the movement took place, and that the disease will now actually die out in the Acholi area. In the East and West Madi areas the number of people attending for examination was much smaller than in 1921, but so far as the figures go they are encouraging. The disease has apparently diminished in East Madi from 94 to 76 per 10,000 and in West Madi from 65 to 16 per 10,000.

A complete tour of the Chua district was made during February. In 1922 the author had pointed out that the only cases of sleeping sickness in Chua were on the Chua-Gulu border, and it was strongly urged that a thorough clearing of all crossings and watering places was

vital if the onset of the disease was to be checked. Unfortunately, this has not been efficiently done and this year it was found that the infection had spread.

W. Y.

BEVEN (J. O.). **Note on a Trypanosomiasis Census of the Populations on the Miriu River, Central and South Kavirondo Districts, Nyanza Province.**—*Kenya Med. Jl.* 1925. Dec. Vol. 2. No. 9. pp. 251–254.

Miriu forms the boundary between Central and South Kavirondo, and the population affected can be divided into three groups ; two on the South Bank and one on the North.

Group A. The Kabuya Clan lives on the South Bank and its nearest villages are about three-quarters of a mile from the river. This clan obtains its water from a ford at which the fly density was less than 5 p.b.h. It largely engages in fishing in reaches where the density varies from 5 to 20 p.b.h. and infested bush was constantly visited for purposes of cutting poles, etc. In short, the degree of contact between the population and the fly can be described as very close, although the population lived well over a mile from heavily infested bush. Of 764 persons examined in 56 villages, 407 (53 per cent.) were found to be suffering from sleeping sickness. Beven remarks that about 50 per cent. of these cases were treated prior to his arrival in the district, the patient receiving from one or two to as many as thirty injections, and he adds : "it is very unfortunate that no record was left of the treatment given or of clinical findings, as all subsequent work on these cases is, therefore, rendered incomplete." [It is really lamentable how often one meets with this sort of thing in the literature, and it is high time that the therapeutic work in this disease was put on a proper footing and arrangements made to ensure that cases treated are properly recorded and their subsequent history observed.]

Group B. The Kabala Clan also lives on the South Bank, but below the fly belt. The majority of the villages obtain their waters from the lake or ponds, or from a ford below the limit of the fly. The inhabitants of the villages closest to the river do, however, to a small extent frequent infested reaches and a census of these should be made.

Group C. The Nyakach Villages are on the North Bank of the river, and here again only a proportion of the population use the river. Of 1,173 persons examined in 78 villages, 344 (29·2 per cent.) were found to be suffering from the disease.

The author remarks that at first sight the high incidence revealed by these figures, which are based on clinical and not on microscopical examination, makes one doubt the accuracy of the diagnosis, but closer enquiries into the facts in local conditions disperse this doubt. The incidence of the disease among children under sixteen is very high. It is lower among adult males and very low among women and old people of either sex. Beven believes this to be due to the fact that the children spend the greater part of the day either actually fishing on the river or in the adjacent bush herding stock. Some account of the clinical symptoms is given and it is also mentioned that the rapid improvement of cases treated by "Bayer 205" or tryparsamide supports the diagnosis. It is very remarkable how little disturbance the disease causes in some cases for considerable periods. Trypanosomiasis never completely died out in the area after the epidemic of 1909–1912. Beven believes

that the population has acquired a degree of relative immunity or that the strain of trypanosomes concerned has been in some way modified in virulence ; he remarks on the scarcity of trypanosomes in the blood and gland juice of these cases and adds that the whole picture seems to resemble very closely that reported by MACFIE in Eket.

W. Y.

DAVEY (John B.). **The Sleeping Sickness Outbreak in Mwanza District.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 & 6. pp. 336–338. [4 refs.]

This paper is a rejoinder to one by SWYNNERTON [see this *Bulletin*, Vol. 20, pp. 311 ; Vol. 21, p. 748 ; and Vol. 23, p. 50]. In his previous paper Davey had strongly expressed the opinion that SWYNNERTON'S contentions could not be accepted. These were (1) that the proposed experiment in game destruction has for practical purposes been carried out in Mwanza District, and that we know the result ; and (2) that the fly was driven, by scarcity of game, to feed on man.

Fortunately, the long-desired experiment of game destruction has now been carried out and details are published in the *Rhodesian Agricultural Journal*, Vol. 20, Nos. 2, 3 and 6, 1923. [*loc. cit.* Vol. 21, pp. 149 and 435.] This fact relieves Davey of the necessity of replying in detail to SWYNNERTON'S last communication. Regarding the facts brought out by the experiment, JACK expresses himself most definitely, time and again, as for example :—

"The observations recorded here are altogether confirmatory of the assertion of the early hunters and explorers that where the game is ruthlessly hunted, the fly tends gradually to disappear." Again—"It would be difficult under the conditions of this experiment to imagine anything more convincing in regard to the effect of removing the game than the position in regard to tsetse fly and game since and including the dry season of 1921 . . . The general tendency of the fly areas throughout the territory, during the experiments, has been progressive ; advances, sometimes associated with the death of native cattle in formerly healthy areas, having been recorded in many parts."

With regard to the suggestion that game destruction might result in *G. morsitans* tending to concentrate on human beings, and thus increase the danger of epidemics of sleeping sickness, JACK says :—

"In point of fact, the fly disappeared most rapidly in the vicinity of the camps, although these were all situated in favourable country for the insect" ; and Davey compares this statement with SWYNNERTON'S, viz. : "As regards the likelihood that the presence of game protects man against trypanosomiasis, one can merely repeat that its removal does, definitely, have the effect of concentrating the tsetse to a greater extent on man, and that such concentration seems bound to facilitate the course of an epidemic or the conversion of sporadic cases into an epidemic."

In JACK'S account of what SWYNNERTON himself describes as an "excellently organized experiment", "we have the facts of the crucial experiment which have been awaited for years to give a lead to policy. It provides a complete refutation of the theoretical objections to game destruction" advanced by SWYNNERTON.

It remains to act upon the facts elicited by the Rhodesian experiment. Nobody has suggested that throughout the tsetse area of Africa paid hunters should be employed to exterminate the game as was done in the Rhodesian experiment ; the idea is too fantastic to call for remark,

were it not that the supporters of game preservation impute this policy to those who inculcate the game.

In Tanganyika tens of thousands of natives are only awaiting to do it gratis, with the object of protecting their crops from the ravages of game and of supplementing their own dietary.

Davey concludes as follows :—

"That it would take a considerable time for them to restore that balance of Nature, particularly as between primitive man and beast, which the restrictions on hunting during the past twenty or thirty years have disturbed with such serious results, cannot be doubted. But that it would be accomplished and results achieved, approximating to those attained in the Rhodesian experiment, I feel sure."

W. Y.

JAMOT (E.). La maladie du sommeil au Cameroun. [**Sleeping Sickness in Cameroon.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 762–769.

A brief summary is given of some of the results of the work on sleeping sickness accomplished in the Cameroons since the French occupation and particularly since the middle of 1920.

The first efforts of the French were made in the regions of Nyong and Doumé, where the Germans had organized some years before the War a number of segregation camps and in 1913 a regular prophylactic service. According to German reports the territories of these two rivers were re-examined in 1914 and 4,000 to 5,000 sleeping sickness cases found. Jamot, however, believes for reasons given that the true figure was at this period much greater. In the middle of 1920 JOJOT was sent to study the subject carefully and to organize prophylactic measures in the subdivisions of Akonolinga, Abong-Mbang, and of Doumé. In less than two years he reconstructed the sanitary camp of Ayos and made a fresh census of the subdivisions of Akonolinga and Abong-Mbang, finding 6,500 cases. At the same time HUOT explored the Doumé region, where he found more than 2,000 cases. At the commencement of 1922, Jamot was sent to replace JOJOT. He immediately proposed to organize research missions for treatment on the lines of those which he had carried on with success for some years in Oubangui-Chari ; he then hoped to visit systematically all the villages of the sector and to examine one by one all the inhabitants. With the assistance of five of his colleagues, the author visited all the villages in the three subdivisions and examined almost all the inhabitants. They were able to establish that the Nyong is an epidemic focus of extreme intensity. In certain villages situated near the river between Abong-Mbang and Kolmaka 17,797 persons were examined and 14,374 found to be infected. From the Nyong the disease spreads in all directions, but diminishes in intensity as the distance from the river increases.

Details are given of the incidence of the disease in various parts of the three divisions.

The rivers of Logone and of Oubangui-Chari are especially infested by tsetse, which are apparently all *G. tachinoides*. *G. palpalis* was never found, and if it occurs must be extremely rare. There exists a striking parallelism between the distribution of fly and that of the disease, and it is probable that *G. tachinoides* plays in the northern districts a rôle which is played by *G. palpalis* in the more equatorial regions.

There are in the Cameroons many other foci of trypanosomiasis ; the Germans had already drawn attention to the existence of a number of these, but it has not yet been possible to study them. The census which the Germans have made shows that up to the 1st June last 45,176 cases had been discovered, and that up to the date mentioned 12,659 had died. Immediately a diagnosis was made the patients received a large dose of atoxyl. They were then provided with a tally and sent back to their villages. The travelling missions, under the charge of European sanitary assistants, visited the villages periodically and administered the treatment prescribed, but at each village they had to register a great number of defections. The advanced cases, who appreciated the good results of treatment, came regularly for further injections, but those of the first period who, as a rule, did not feel ill, did not comprehend the necessity for the injections and endeavoured to escape them. It is calculated that in the Nyong and Doumé districts more than 10,000 cases escaped the treatment.

W. Y.

Brau. La lutte contre la maladie du sommeil au Cameroun. [**Measures against Sleeping Sickness in Cameroon.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. Sept.–Oct.–Nov.–Dec. Vol. 23. pp. 403–444. [Refs. in foot-notes.]

In this long paper the author gives a detailed account of the history of sleeping sickness work done by the Germans, and subsequently by the French, in the Cameroons. As most of this work has already been described by various authors in previous papers, it need not be summarized here again.

W. Y.

Fourche (J. A.). Société Internationale Forestière et Minière du Congo. Rapport de la mission contre la maladie du sommeil, mai 1923 à mai 1925. [**Report of the S.I.F.M.C. Mission against Sleeping Sickness in Congo, May 1923-May 1925.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 215–247. With 24 figs.

The district of Kasai, which has a population of 1,500,000, had remained entirely unsurveyed medically up to 1920. The present paper deals with the sleeping sickness work accomplished between May 1923 and May 1925. During this period the mission examined and treated twice all the inhabitants of the Forminière-Kasai concessions, and the labourers, of whom they have only had charge since July 1924, once.

At the first examination 30,000 natives were examined, and at the revision 40,000 natives and 20,000 workers. During the first examination 581 cases of sleeping sickness were discovered and treated, and at least as many suspects were also treated. The percentage of sterilizations obtained varied from 35 to 72, *i.e.*, about 55 for the whole territory. In the revision 960 cases were treated—some old cases and some new—and at least an equal number of suspects. In addition, during the last nine months 400 infected labourers and at least as many suspects were also treated. The author is not able yet to form an opinion regarding the results of the treatment of these cases, but he has every reason to believe that they will be better than those obtained during the first inspection.

Between Tshikapa and Kabambai, where the disease is almost completely imported from the country to the east, the number of infected is less than 1 per cent. ; but as all the streams of the Kasai are infested with tsetse, as also are many other rivers in the district, there is cause to fear that unless steps are taken a permanent focus of the disease will be established.

The territory lying on the left of the Kasai between the Angola, the Lovua, and the Lubembe is already infected. In the whole district constituting the Forminière concessions only *T. gambiense* was found ; infections due to *T. rhodesiense* are unknown. Although difficulties of organization rendered the first tour of inspection less perfect than could be desired, it is calculated that the number infected varied in the different parts of the concessions from 2 to 10 per cent., with probably an average infection rate of 5 per cent. for all the territory on the left bank of the Kasai. The disease is spreading, but fortunately only slowly, especially as one proceeds east. As a result of the campaign the progress is practically arrested.

W. Y.

DE WOLF (H.). Palpation ganglionnaire et diagnostic de la maladie du sommeil dans le traitement ambulatoire. [**Gland Palpation and Diagnosis of Sleeping Sickness in Ambulatory Treatment.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 189–195.

Of late much has been written on the subject of gland palpation as of diagnostic value for the ambulatory treatment of sleeping sickness. In the present note the author stresses the value of this sign : he classifies the cases exhibiting glandular enlargement according to the number of the enlarged glands and their size but not consistence, and by this means separates them into three groups :—large formula, moderate formula, and small formula. In a series of tables he sets forth the results of examining the population, showing the number falling into each of the above groups and the number of each in which gland puncture was positive. Apparently the percentage of the small and moderate formulas positive depends almost exclusively on the number of large formulas positive and the total percentage of positive formulas is specially influenced by the number of large formulas in the district.

The value which the author attributes to the different formulas as of diagnostic value for the treatment of sleeping sickness is as follows :—

1. *With large formula.* Since a single puncture in the group gives 60 per cent. of positive results, the author considers it unnecessary to puncture any of this group, and in view of the urgency of the matter, simply a waste of precious time. The negative results of microscopic examination obtained in 40 per cent. of cases is believed to be due to the fact that the glands were the result of infective conditions of the skin and scalp or of yaws and syphilis, to the fact that the microscopic preparation was poor, or to the fact that too small a quantity of gland juice was obtained.

2. *With moderate or small formula.* This depends almost entirely on the number with large formula. If in a region there are no cases with large formula, the author considers all are negative and need not be punctured ; but if on the contrary there are many with large formula, he considers all positive and consequently that puncture is unnecessary.

The following are among the general conclusions :—

1. The author attaches great diagnostic value to gland palpation not followed by puncture.
2. It is unnecessary to puncture in ambulatory treatment either those with large formula or those with moderate or small formula ; to the first group a curative course of treatment should be given and the last two a prophylactic course.
3. In districts where only moderate small formulas are found, treatment is unnecessary ; such regions can be considered as free from sleeping sickness.

W. Y.

VAN DEN BRANDEN (F.). Sur un essai d'administration de " Bayer 205 " prophylactique dans une agglomération indigène. [**Trial of " Bayer 205 " Prophylactically in a Native Chiefdom.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 175–177.

Trypanosomiasis is endemic in the chiefdom of Binza and as the result of an examination of the population 2·3 to 3 per cent. of new cases were found. All the inhabitants, 256 in number, were treated with "Bayer 205" in February and March 1923 : the adults had one injection of 1 gm., the young people two injections each of ·5 gm., the children two injections of ·25 gm. each, and the sucklings two injections of ·1 gm. each. After three prophylactic injections the population has been submitted to two rigid re-examinations, the first in December 1923 and the second in October 1924. The first re-examination resulted in the discovery of two new cases, both in children, and the second in that of three new cases. In a subsequent note the author adds that he has since this paper was written commenced a third re-examination, in May 1925 and has already found 5 new cases. He adds that in order to obtain lasting results the prophylactic injections of "Bayer 205" will have to be renewed at least every nineteen months.

W. Y.

STRADA (L.) & LOPES (A. J.). Notes préliminaires sur le traitement de la trypanose humaine par la germanine (" 205 Bayer "). [**Treatment of Human Trypanosomiasis by " Bayer 205".**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 179–187.

The patients were all advanced cases previously treated with atoxyl, or atoxyl and emetic : they can be divided into two groups, mild cases in which spinal punctures revealed less than 25 elements per cmm., and severe cases where there were over 25 elements per cmm. The dose administered was 2 cgm. per kilo. of body weight ; in the first cases three injections were given, viz., on the third, first and thirteenth days, but in the later cases four, viz., on the first, third, fifth and fifteenth days.

Details of the 43 cases treated are given in a table showing the results of spinal puncture before and after treatment. The general result appears to be that the drug was well tolerated, that the general condition was frequently improved, but that little or no change occurred in the spnal fluid.

W. Y.

WALRAVENS (P.). Le traitement de la maladie du sommeil par le "205 Bayer." [**Treatment of Sleeping Sickness by "Bayer 205".**] —*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 641–645.

This paper gives later information regarding the Congo cases of sleeping sickness treated by KLEINE and FISCHER in 1923. Although there is some doubt regarding the condition of the spinal fluid in these cases the author estimates that 48 were in the first stage and 47 in the second stage. These patients were treated at the beginning of 1923 and their blood has been re-examined at regular intervals since. In April 1925 the author made a lumbar puncture and examined a thick film of the blood of all the cases he was able to collect; the results are shown in a table. Of the 95 cases 27 (28·4 per cent.) are dead, and of the 44 who were re-examined 25 had a normal spinal fluid and negative blood, 5 appeared to be sterile, 12 are in the second stage of the disease and 1 has a doubtful condition of the spinal fluid.

The second portion of the paper relates to the later history of 11 cases, mostly in the second stage of the disease, treated with combinations of "Bayer 205" and of emetic, neosalvarsan or atoxyl. The spinal fluid was examined one month and six months respectively after treatment; each patient was then given 25 gm. of tryparsamide and the spinal fluid again examined six months later. Eight cases can be regarded as definitely cured and one as probably cured.

W. Y.

VAN DEN BRANDEN (F.). Le tryparsamide chez les trypanosés chroniques. Communication préliminaire. [**Tryparsamide in Chronic Trypanosomiasis.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 645–647. [1 ref.]

The author favours the administration of a weekly dose of 2 gm. of tryparsamide and records that in his series of 115 cases it has only once been found necessary to interrupt the treatment on account of ocular trouble. The total dose administered varied from 20 to 70 gm. and the author believes that in order to obtain real and permanent results in chronic trypanosomiasis it is necessary in most cases to give from 70 to 80 gm.

In this paper are recorded the results obtained in the first cases; the patients are grouped into six classes.

Class 1. Those in which the spinal fluid did not contain more than 50 lymphocytes per cmm. In this class 57 per cent. of apparent cures were obtained with doses varying from 20 to 62 gm.

Class 2. The spinal fluid contained 50 to 100 lymphocytes per cmm. In this class 22 per cent. died and 33 per cent. were apparently cured with doses varying from 17 gm. (in a child) to 60 gm.

Class 3. The spinal fluid contained 100 to 200 lymphocytes per cmm. Here 25 per cent. of apparent cures were obtained with doses varying from 20 to 70 gm.

Class 4. The spinal fluid contained 200 to 500 lymphocytes per cmm: 6·3 per cent. died and there were 12·5 per cent. of apparent cures with doses varying from 15 gm. (in a child) to 70 gm.

Class 5. The spinal fluid contained more than 500 lymphocytes per cmm.; 25 per cent. of apparent cures were obtained with doses varying from 19 to 74 gm.

Class 6. The spinal fluid contained trypanosomes : 17·6 per cent. died and 17·6 per cent. were apparent cures after doses varying from 19 to 60 gm.

The author is continuing the observations and treatment of most of the chronic cases and in some of them the total dose given within 10 months already exceeds 80 gm. In a series of control cases of chronic trypanosomiasis treated with soamin and tartar emetic, the total dosage varying from 7·5 gm. of soamin and 1·3 gm. of emetic to 29 gm. of soamin and 5·6 gm. of emetic, 17 per cent. of apparent cures were obtained.

W. Y.

Laigret (J.). Note sur le traitement de la trypanosomiase humaine par la tryparsamide et l'utilisation de ce produit dans la pratique prophylactique. [**Treatment and Prophylaxis of Human Trypanosomiasis by Tryparsamide.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 775–779.

The author summarizes the results obtained in the treatment of 95 cases of sleeping sickness by tryparsamide. Most of the patients have been observed during a period of from eight to twelve months. Owing to the limited amount of drug at disposal only very incomplete courses of 5 or 6 weekly injections could be given : the dose varied from 1 gm. to 3·5 gm. per injection. All the patients were in the second stage of the disease.

In patients in the early second stage, i.e., with only slight changes in the spinal fluid, there was no untoward results such as one encounters from time to time with massive doses of atoxyl : and in all instances there was a marked decrease in the lymphocytosis and excess of globulin, so that in half the cases the fluid became, and has remained, normal.

In patients well in the second stage, but in good clinical condition, i.e., with profoundly damaged spinal fluid containing trypanosomes, transient amaurosis developed in one case, but disappeared on cessation of treatment ; there were no deaths and no acceleration in the development of the disease. One case relapsed with parasites in the blood, but in the remaining 29 cases there was a persistent sterilization of the blood and cerebrospinal fluid, and in 20 cases the latter became absolutely normal.

Among patients in advanced stages with profound cerebrospinal changes and well-developed nervous symptoms, the same favourable action of the drug was noted : trypanosomes disappeared from the spinal-fluid and the lymphocytosis and excess of globulin decreased, sometimes even to normal. This was accompanied by extremely rapid clinical amelioration which greatly impressed the native population. Apparently, patients even in this advanced stage have been cured ; the only accidents noted were transient amaurosis in two cases, and one death which was due to the fact that too large a dose of the drug was given ; in this class of patient the initial dose should not exceed 1·0 to 1·5 gm.

In patients in the last stage of the disease, who in the ordinary way might have been expected to die in a few weeks, 13 of the 18 treated are still alive after periods varying from 8 to 12 months and seven appeared to be cured. Stress is laid on the fact that these cases should be treated by very small initial doses of the drug, and the author believes that the fatalities and blindness produced by the drug were due entirely to the administration of too large initial doses.

The use of tryparsamide has completely modified the general aspect of the hospital at Brazzaville: the mortality which before tryparsamide was 4 to 12 per cent. per month fell to 2 or 3 per cent. and in certain months to nothing. It will probably be found desirable to substitute tryparsamide for atoxyl for general prophylactic purposes. The value of the drug from this point of view can be judged from the following facts:—

Of 100 patients in the first stage of the disease treated by VAN DEN BRANDEN the peripheral sterilization of all had been maintained during an observation period of a year, whilst amongst the 95 patients in the second stage of the disease treated by the author and observed for an average period of seven months, only one (who received a very small quantity of the drug) relapsed with parasites in the blood, and only in one did the parasites reappear in the cerebrospinal fluid.

Attention is drawn to the moral effect produced by the favourable results obtained by the drug, and to the fact that tryparsamide is of value in the treatment of syphilis and yaws, the two diseases which, after sleeping sickness, are most widely spread in the French equatorial possessions. There appear to be only two objections to the drug; the first is the necessity to inject it either intramuscularly or intravenously, but this is, after all, a trivial objection; the second, its relatively high price, is more serious. The author advises the substitution of the usual prophylactic course of six injections of atoxyl by six weekly injections of tryparsamide in the following doses:— The first two 4 cgm. per kilo of body weight, the next two 5 cgm. per kilo, and the last two 6 cgm. per kilo, i.e., a total of 15 gms. for an adult of 50 kilogrammes. This course will work out at about thirty francs per patient.

W. Y.

VAN DEN BRANDEN (F.). Le stovarsol ou "acide acétyloxyaminophénylarsinique" dans le traitement de la trypanosomiase humaine. [**Stovarsol in the Treatment of Human Trypanosomiasis.**] —*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 33–36.

Good results reported by a number of workers in the treatment of syphilis by stovarsol have led the author to try this drug, which can be so easily administered by the mouth, in human trypanosomiasis and yaws. It was found that the native tolerates large doses and that as much as 3 gm. could be given daily for many consecutive days. As its action in trypanosomiasis is but slow and transient, the drug cannot be considered to have any value in the therapy of this disease.

W. Y.

DIOS (R. L.), ZUCCARINI (J. A.) & OYARZABAL (J.). Sobre un nuevo caso de Tripanosomosis humana en la Rep. Argentina. [**Fresh Case of Human Trypanosomiasis in the Argentine.**]— *Rev. Inst. Bacteriolog.* Buenos Aires. 1925. Sept. Vol. 4. No. 2. pp. 164–168. With 5 text figs. and *C.R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1114–1115.

This paper contains a brief clinical account of three cases of human trypanosomiasis in the Argentine. The first was that of a girl of 6 months, the second a girl of 8 years, and the third a boy of 4 years. The first two cases have been recorded previously. The third patient lived in a grass hut infested by numerous Triatoma: he exhibited

facial oedema, slight exophthalmos, oedema of the eyelids and along the legs, some adenitis and enlargement of the thyroid: the heart and lungs were normal, the spleen normal, the liver slightly enlarged, and the reflexes slightly exaggerated. Trypanosomes were always scanty in the blood; the spinal fluid was normal. The blood was inoculated into 5 guineapigs, 5 rats, 3 young dogs and a falcon: 2 rats and the 3 dogs became infected.

W. Y.

Dukelsky (Olga). Ueber die Neutralisierung des Anaphylatoxins durch Salvarsan mit Verbindung mit der Pathogenese der Todesfälle bei trypanosomen Erkrankungen. [**The Neutralization of Anaphylatoxin by Salvarsan in Relation to the Pathogenesis of Death in Trypanosome Infections.**] *Arb. a.d. Microbiol. Inst. des Volksunterrichtskomissariats.* Moscow. 1925. Vol. 1. German summary p. 27. [In Russian pp. 19–26. 18 refs.]

It has already been shown by a number of authors that trypanosomes *in vitro* and in the animal organism can form an anaphylatoxin in the blood serum.

The author's attempts to neutralize the anaphylatoxin through salvarsan *in vitro* have for the most part been successful. The addition of salvarsan to a lethal dose of anaphylatoxin renders it harmless to guineapigs, the control animals receiving an equal dose of anaphylatoxin dying in a few minutes.

The clinical symptom-complex and the rapid occurrence of death in acute trypanosomiasis remind one greatly of an anaphylactic shock. This consideration, and the rapid improvement of the experimental animals after the administration of salvarsan, warrant the conclusion that the symptoms and death produced by trypanosome infections are the result of anaphylatoxins and that these are neutralized *in vivo* by salvarsan just as they are *in vitro*. The capacity of salvarsan to neutralize anaphylatoxin is dependent on its high physico-chemical activity.

W. Y.

Johnson (W. B.). **The Serum-Formalin Reaction upon Sera of Natives of Nigeria.** *Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 and 6. pp. 328-329.

The author records the results of the serum-formalin and Sachs-Georgi tests made at the same time on 168 cases in Nigeria where syphilis and protozoal infections are exceedingly common. The tests were made at the native hospital at Kaduna from January to September, 1925, in cases of suspected syphilis upon whom the Sachs Georgi test had been done for diagnostic purposes. The serum-formalin test was performed by adding 1 minim of commercial formalin to 1 cc. of serum: the formation of a complete "gel" was recorded as positive, that of an incomplete "gel" as weakly positive, and when the serum remained fluid after 24 hours the reaction was negative. Of the 168 sera examined 84 were positive, 24 weakly positive, and 60 negative. The results are set forth in a table from which it is seen that of 99 cases in which the Sachs-Georgi reaction was positive 80·8 per cent. gave a positive serum-formalin reaction, of the 28 cases in which the Sachs-Georgi reaction was weakly positive 53·6 per cent. gave a positive serum-formalin reaction, and of the 41 cases in which the Sachs-Georgi reaction

was negative 31·7 per cent. gave a positive serum-formalin reaction [see MORRISON, this *Bulletin*, Vol. 22, p. 539].

The conclusion is as follows :—

" In view of the high percentage of a positive serum-formalin reaction in cases of syphilis (so prevalent a disease in most tropical countries), and of the occurrence of a positive reaction in a fair percentage of patients suffering from other diseases it would appear that the serum-formalin reaction can be of little value in estimating past or present trypanosome infection."

W. Y.

SCHERN (Kurt). Ueber Trypanosomen. I—VI Mitteilungen. [**On Trypanosomes. Contributions 1-6.**]—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 2. Vol. 96. No. 5-6. pp. 356–360 [1 ref.] ; 360–362 ; 362–365 & Nov. 25. No. 7-8. pp. 440–443 ; 444–451 ; 451–454. [3 refs.]

I. Das Phänomen der Trypanosomenwiederbelebung und das Vorhandensein vergärbarer Substanzen in den Lebern und deren Extrakten, welche " wiederbelebend " wirken. [**The Phenomenon of Revival of Trypanosomes and the Existence of Fermentable Substances in the Liver and its Extracts which have a Re-animating Effect.**]

Whilst working in UHLENHUTH's laboratory, the author had observed that the addition of blood of healthy rats or horses to a coverslip preparation of infected blood—nagana, dourine, or sleeping sickness—which had been kept until the parasites had become motionless or almost so, soon caused the trypanosomes to regain their former activity. The length of time trypanosomes remain active *in vitro* depends on the stage of the infection when the preparation is made ; the earlier the infection the longer the parasites preserve their motility *in vitro* ; preparations made from rats at the beginning of the infection remain active for many hours, whereas those made shortly before the death of the animal become motionless in a few minutes. The phenomenon enables one to forecast the length of time which the host will live ; if the trypanosomes from an infected rat remain active *in vitro* for several hours the animal will probably remain alive for a comparatively long time, but if the parasites become motionless in about ten minutes then the host is likely to die within a few hours.

Investigation showed that the re-animating substance was found only in the serum and in liver extracts ; it was thermostabile, withstood drying, and survived for long periods at 37° C., as also at 0° C. ; but it quickly disappeared if the solution became putrid. The author was able to obtain from the serum and liver a mass which contained the re-animating substance in concentrated form and this mass (liver extract) has been kept for years without losing its properties. Subsequent investigation showed that extracts of serum and liver of animals in the last stage of trypanosomiasis possessed the re-animating property in relatively slight degree, or not at all. Arsenical treatment of such animals caused it to re-appear again, but if the trypanosomes became arsenic-fast it disappeared once more. Experiments showed that trypanosomiasis influenced the capacity of the liver to deal with carbohydrates : rats, at the beginning of an infection could assimilate considerable quantities of carbohydrates, but in animals in the last stage of infection the carbohydrates were poured out in the urine.

It was next determined that a 10 per cent. solution of liver extract from cattle, hens, rabbits, guineapigs or rats in distilled water contained a substance which was readily fermentable by yeast and gave in fact distinctly more gas than a 1 per cent. solution of grape sugar. The general conclusion is reached that liver extracts of normal animals which exert a re-animating action on trypanosomes contain substances which are readily fermentable by yeast.

II. Sind in den Extrakten, welche aus den Lebern der an einer akuten Trypanosomiasis verendeten Tiere hergestellt sind, noch durch Hefe vergärbare Substanzen vorhanden ? [**Do the Extracts prepared from the Liver of an Animal which has died from Acute Trypanosomiasis contain Yeast Fermentable Substances ?**]

Experiments described in this paper show that the yeast fermentable substance is absent from liver extracts of animals in the last stage of trypanosomiasis ; and it is concluded that the liver sugar so important for the life of the organism disappears in the course of the infection.

III. In welcher Weise wirken die vermittels Hefe vergorenen Extrakte der Lebern normaler Tiere in bezug auf das von mir beschriebene Trypanosomenphänomen ? [**In what Manner do the Fermentable Substances in Extracts of Normal Liver act in Relation to the Trypanosome Re-animating Phenomenon ?**]

It was found that normal liver extracts which before fermentation give the re-animating reaction fail in the same degree to do so after fermentation ; and from this fact it is concluded that the reaction is dependent on liver sugar.

IV. Der Nachweis des Mangels der das Trypanosomenphänomen der Wiederbelebung bedingenden Substanzen in Serum und Leber chronisch infiziert gewesener, trypanosomenkranker Tiere. [**The Demonstration of the Deficiency of the Trypanosome Re-animating Substance in the Serum and Liver of Animals suffering from Chronic Trypanosomiasis.**]

Whereas in the earlier experiments rats had been used in the experiments here recorded, the author employed rabbits infected with *T. equinum*. He found that the reaction given by the serum and liver of the animal suffering from a chronic infection was much inferior to that given by the serum and liver of normal animals ; and that the livers were also deficient in liver-sugar. Similar observations were made in horses suffering from mal-de-caderas.

V. Das Trypanosomenphänomen und die Wirkung von Dextrose- und Lävuloselösungen sowie von Leberbrei-Insulin auf labile Trypanosomen. [**The Trypanosome Phenomenon and the Action of Dextrose and Laevulose Solutions and also of Liver-Mush-Insulin on Labile Trypanosomes.**]

It was found that solutions of dextrose and laevulose prolonged the period of activity of trypanosomes *in vitro*, and the action of various strengths of solution of these sugars is compared with that of normal rabbit and horse serum and of liver extracts of normal rabbits and hens. Finally, it was shown that if a guineapig be bled dry and its liver ground up in a mortar without the addition of fluid, its re-animating action was definitely lessened by treatment with insulin.

VI. Erörterungen ueber die Pathogenese der Trypanosomiasis auf Grund der Beobachtungen ueber das Zuckerphänomen der Trypanosomen. [**Discussion on the Pathogenesis of Trypanosomiasis based on the Observations of the Sugar Phenomenon of Trypanosomes.**]

This commences by summarizing the chief observations and conclusions reached in the five previous communications. These are as follows :—

1. In the serum and liver of normal animals are substances which re-animate trypanosomes which had become immobile *in vitro* and prolong the period of their mobility ; the chief constituent of these substances is sugar.
2. These substances disappear from the serum of animals which are infected with trypanosomes during the course of the infection.
3. These substances (and the sugar) are absent in the serum and liver of animals which are dying of trypanosomiasis.
4. They reappear in rats which have been cured of trypanosomiasis by arsenic, their reappearance being gradual and corresponding to the disappearance of trypanosomes from the body.
5. The substance can be obtained in concentrated form from the liver extract of normal animals ; dilution of such extracts cuts out the sugar phenomenon, so that the red corpuscles present in the trypanosome suspensions become dark red, probably as a result of the metabolism of the trypanosomes.
6. The substances can be removed from normal liver extracts by fermentation of yeast.
7. Yeast fermented extracts of the liver of normal animals do not cut out the sugar phenomenon of the trypanosomes.
8. Liver extracts obtained from animals which die of trypanosomiasis are deficient in yeast fermentable bodies in comparison with extracts of normal livers.
9. Rats in the last stage of trypanosomiasis which had been given carbohydrates showed them in the urine.
10. Laevulose and dextrose solutions (·5 per cent. in ·05 per cent. NaCl) produce a sugar phenomenon of trypanosomes ; insulin limits the sugar phenomenon somewhat. Chemical investigation of the blood of trypanosome infected animals shows hypoglycaemia in the advanced stages of the infection.

The author asks what general conclusions can be drawn from this work regarding the pathology of trypanosomiasis, especially in respect of the mode of action of the trypanosomes in the organism. He believes that the blood and liver sugar is in some way or other gradually used up by the trypanosomes for their metabolism ; this process is at first regulated by the liver which gives out a corresponding quantity of sugar into the blood, yet as things continue owing to the multiplication of the trypanosomes, the liver finally gives out and becomes almost entirely drained of sugar. One pathogenic action of trypanosomiasis is hence a disturbance of the liver function of storing carbohydrates and finally there develops absolute hypoglycaemia and all its consequences.

W. Y.

Bevan (Ll. E. W.). **The Trypanosomiases of Man and Animals in Southern Rhodesia.**— *Vet. Jl.* 1925. Nov. Vol. 81. No. 11. pp. 536–546.

This paper was an address delivered at a Conference to consider ways and means of dealing with tsetse fly and the diseases distributed by it, held at Salisbury on April 14th, 1925. It is a general summary of the subject and contains nothing new.

W. Y.

BLACKWATER FEVER.

Macmillan (R. J. A.). **Report on Blackwater Fever in Uganda for 1924.**—*Uganda Ann. Med. & San. Rep. for Year ended 31st Dec., 1924.* pp. 56–61.

During the year 1924, 70 cases of blackwater fever were treated and 23 ended fatally. The greatest incidence of cases was in July and November and the lowest in April and September. The months in which the highest incidence occurred were those in which the lowest temperatures were recorded. A series of tables is given showing the age, race, and sex incidence, the number of officials and non-officials infected, and the length of residence in the tropics. Twenty-four of the patients had had previous attacks, and of these 7 ended fatally. Every case gave a history of previous and more or less frequent attacks of malaria, which had been inadequately treated. The blood of 17 cases was examined prior to the attack of blackwater :—In 6 no parasites were found, in 4 *P. falciparum*, in 4 *P. vivax*, and in 3 a mixed infection. Forty-nine cases were examined during the attack :—In 27 no parasites were found, in 15 *P. falciparum*, in 5 *P. vivax*, and in 2 a mixed infection.

A certain amount of information is given regarding the number of red cells and leucocytes per millimetre of blood. In 61 of the cases there was no relapse and 21 deaths occurred. In 9 cases relapses—one had 16—were observed ; 2 of these ended fatally. The cause of death in the 23 fatal cases is recorded as follows :—Cardiac failure 18, suppression and cardiac failure 2, suppression 2, and uraemia following suppression 1. Information is given regarding symptomatology and treatment.

The author writes that from a careful analysis of 224 cases of blackwater which have occurred in Uganda during the past three years there appear to be excellent grounds for coming to the following conclusions :—

" (*a*) There is such a thing as quinine intolerance and this drug can produce haemoglobinuria in cases which exhibit this idiosyncrasy—a case is cited this year of a young Asiatic who, whenever quinine is given him, at once develops Blackwater within the hour—he has had eight attacks already, owing to medical officers not believing his statement and attempts being made to conceal the quinine in mixtures—he carries a medical certificate now that he cannot tolerate quinine and that it must not be given him.

" (*b*) Apart from quinine intolerance there is also a critical exciting dose of quinine—it may be 10, 15, 20, 30, 40 grains or more—which, according to experience in this Protectorate, certainly precipitates attacks of Blackwater in certain cases.

" (*c*) It would appear that in a great many cases a second attack, not a relapse, is dependent on the patient being re-infected with a fresh malarial infection since the first attack. I mention this because our statistics show that many cases who have had more than one attack have suffered from malaria more or less inadequately treated in between the attacks of Blackwater; yet there are cases who have suffered from one attack of Blackwater and who have been sent or who have gone to a non-malarial region, and they have had no further malarial attacks and no further attacks of Blackwater.

" (*d*) There is a very grave risk of cardiac failure in every case; in 18 cases this year death was due to this and of these 18 cases 13 had been moved

either during the attack or shortly after it. Unless unavoidable, therefore, no case of Blackwater Fever should be moved, and if it has to be moved the same care should be taken as would be exercised in moving a case of diphtheria."

W. Yorke.

Ghiron (Mario). Sulla emoglobinuria nei malarici. [**Haemoglobinuria in Malaria.**]—*Policlinico.* Sez. Med. 1926. Jan. 1. Vol. 33. No. 1. pp. 1–26.

The observations described in this paper were made on four patients suffering from a severe attack of blackwater fever at the time of admission to hospital. The serum of these patients exhibited a marked haemolytic action against red cells impregnated with quinine. Whilst the reaction was obtained with red cells of normal individuals, it was much more striking when the test was performed with red cells from cases of malaria, either benign or malignant tertian. In order, therefore, to obtain well-marked haemolysis three factors are necessary, viz., serum from a case of blackwater fever, red corpuscles from a case of malaria, and quinine.

W. Y.

Brahmachari (Upendra Nath) & Sen (Parimal Bikas). **Certain Observations on the Mechanism of Quinine Haemoglobinuria in Man. No. 1.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 337–341.

The observations recorded in this paper were made on a patient who developed haemoglobinuria each time quinine was given to him. On admission the spleen extended 5 in. below the costal margin ; the red blood corpuscles numbered 1,880,000 ; the white corpuscles 2,500, and the haemoglobin was 35 per cent. No malaria parasites were found, but blood cultured on NNN medium showed the presence of Leishmania. After ten injections of urea stibamine the spleen could not be felt, the blood culture was negative, the fever had disappeared, and there was marked general improvement. Three months later the white corpuscles numbered 7,100 and the blood culture was still negative. A 5-grain dose of quinine bihydrochloride was given on January 12, 1925, March 19th, May 14th, and June 7th. Haemoglobinuria developed within a few hours after each quinine administration and lasted for about twenty-four hours.

It is remarked that repeated examinations of the patient's blood failed to reveal the presence of malaria parasites. A number of observations were made in order to elucidate the mechanism of haemolysis in this case and the following summary of the results is given : —

" 1. In individuals who have a tendency to quinine haemoglobinuria, the red corpuscles are not more vulnerable to quinine than those of other individuals who have no such tendency.

" 2. No haemolysin was discovered in the peripheral blood during the active stages of quinine haemoglobinuria.

" 3. We have demonstrated that during the active stages of quinine haemoglobinuria, the process of haemolysis takes place at least in one of the internal organs, namely, the liver.

" 4. There is nothing in the patient under our observation to indicate that this tendency to haemoglobinuria was due to attacks of malaria.

" 5. The patient was suffering from kala-azar and although he was cured of his disease by urea stibamine, tendency to quinine haemoglobinuria was not diminished after the cure was effected.

"6. We suggest that in individuals susceptible to quinine haemoglobinuria, quinine probably remains adsorbed with an *unknown* substance in the liver for prolonged periods giving rise to a concentration of the drug, at which quinine haemolyses red corpuscles in the test tube. It is a known fact that when quinine is administered to any individual, it does tend to concentrate in the liver; but whether haemolysis will take place in the liver will depend upon (1) The concentration of quinine in the liver; and (2) the period during which such a concentration is maintained in the organ."

W. Y.

Brahmachari (Upendra Nath). **Certain Observations on the Mechanism of Quinine Haemoglobinuria in Man. No. 2.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 695–696.

The author has made observations on a case of blackwater fever in which the mechanism of haemoglobinuria was found to be similar to that of quinine haemoglobinuria. The patient, aged 14, had had haemoglobinuria for four days when he came under observation, haemoglobin appearing in the urine about six hours after oral administration of quinine. The spleen was hard and extended two inches below the costal arch and the fever was of an intermittent type with double rises in twenty-four hours.

The patient was asked to pass urine and at the same time blood was withdrawn from the liver and from a vein at the bend of the elbow. The following observations were made:—(1) Blood from liver showed distinct haemolysis; (2) Peripheral blood showed very faint haemolysis; and (3) Urine contained very small quantities of haemoglobin.

The following summary is given:—

"(1) Patient was accustomed to take quinine for attacks of malarial fever from which he was suffering from time to time, but this was the first occasion he had haemoglobinuria.

"(2) The present attack of haemoglobinuria was of an intermittent nature, increasing during heights of fever and diminishing during apyrexia.

"(3) During the stage of active haemolysis, haemolysis was going on in the liver just as in the case of quinine haemoglobinuria.

"(4) Though the patient gave a history of malarial attacks, he was now suffering from kala-azar.

"This is the second case in which haemoglobinuria was manifested in a case of kala-azar."

W. Y.

Vialatte (Ch.). Syndrome bilieux-hémoglobinurique au cours d'un accès de paludisme. [**Blackwater in Course of an Attack of Malaria.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 715–720. With 1 chart in text. [2 refs.]

A detailed clinical history is given of the patient to whom this work relates. He was a Frenchman 20 years of age, who had always lived in France until June, 1925, when he went to Morocco. In July and August he resided in a notoriously malarious district and took no quinine. On August 15th he arrived at Rabat and two days later he became indisposed with vague pains and slight fever; he then took five or six doses of quinine. The condition improved and the patient continued at his work. On August 28th he became seriously ill and was admitted to hospital. The symptoms are described and the blood

was found to contain *P. praecox* in large numbers: 1 gm. of quinine hydrochloride was given orally. The next day the temperature fell, but the slightly icteric tint of the previous day was much accentuated; in the afternoon there was bilious vomiting; 2·5 gm. of quinine was given in fractional doses during the 24 hours. On August 30th the temperature again rose, the general symptoms became much worse and in the evening blackwater was found; the patient had already had 2 gm. of quinine that day and it was deemed prudent to stop the drug on the appearance of the blackwater. On August 31st the symptoms continued and the blood showed scanty infection of *P. praecox*. The urine cleared up in the evening and 1·75 gm. of quinine was given. The next day the patient was better and 2 gm. of quinine was given. He made an uninterrupted recovery.

The author states that the case presented the following peculiarities:—

1. It occurred in a country where bilious haemoglobinuric fever is very exceptional.
2. It occurred during the first attack of malaria in a patient who had never previously had the disease.
3. It yielded to quinine and large doses of the drug did not cause a relapse.

Stress is laid on the fact that icterus definitely preceded the haemoglobinuria.

W. Y.

Rouvroy (H.) & van Nitsen (R.). L'anurie au cours de la fièvre bilieuse hémoglobinurique. [**Anuria in the Course of Blackwater Fever.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 97–100.

Anuria is the gravest complication of blackwater fever. Details are given of a patient who first passed black water on April 30th, 1924, developed suppression of urine on May 2nd, and died on May 15th. Discussing the clinical condition of the patient during this time, the authors state that they had been able to observe very clearly three periods in the course of the anuria. The first was much the longest, lasting about eight days and characterized by hiccough and vomiting. In the second intermediate period constipation was very marked and there was profuse perspiration and frequent vomiting. The last period of confirmed intoxication appeared towards the eleventh day and was characterized by irregular pulse, cardiac bruits, bloody salivation, epistaxis, incessant vomiting, numbness of the limbs, pruritus, and more and more pronounced hebetude.

W. Y.

Nocht (B.). Nouvelles recherches sur la pathogénèse de la fièvre hémoglobinurique paludéenne. [**The Pathogeny of Malarial Haemoglobinuric Fever.**]—*Semana Médica.* 1925. Nov. 26. Vol. 32. No. 48. (1663). pp. 1376–1377.

Much work has been done in order to elucidate the mechanism whereby quinine precipitates an attack of blackwater fever. In this article Nocht summarizes briefly the various points which have been already explored and communicates the result of his own researches on the subject. He points out that research into the pathogenesis of blackwater has taken two main directions. The first was to ascertain whether there was any diminution —general or specific—of the resistance of erythrocytes to quinine; work along this line has given absolutely

negative results. It was followed by investigations on malarial patients, who were unable to tolerate quinine, to determine whether there existed in the serum or organs substances which by combining with quinine produced haemolysis. Reference is made to the work of Ruszniak suggesting that possibly a carbonic acid quinine combination might play a rôle in the production of haemolysis, but later researches made with Kessler have shown that carbonic acid does not determine quinine haemolysis *in vitro* and that fresh extracts of organs from a fatal case of blackwater inhibit at 37° C. the feeble quinine-carbonic acid haemolysis. Similarly with reference to the haemolytic action of the bile acids it has been shown that chemical haemolysis is inhibited *in vitro* by icteric serum.

During the last two years Kritschiffsky and Muratoffa have produced evidence that quinine haemolysis is facilitated *in vitro* by small quantities of lecithin and have reached the conclusion that quinine haemoglobinuria in malaria is produced by the combined action of quinine with the lipoid substances of the organism. At Nocht's request Kessler has repeated these experiments and has found that lecithin in solutions considerably more concentrated than those used by Kritschiffsky and Muratoffa does accelerate quinine haemolysis, but he was unable to find support for the assumption that a serum rich in lipoids hastens quinine haemolysis.

Nocht summarizes briefly the results of experimental work performed by himself. The experiments consisted in injecting dogs with haemolytic amboceptor and observing what effect quinine had on the amboceptor in the organs. The work showed that the action of the haemolytic amboceptor was accelerated and intensified by the administration of quinine. It has not yet been proved that autohaemolysin is developed in malaria patients, but the experiments quoted show how, if it is developed, its action can be intensified by quinine.

W. Y.

Emile-Weil (P.) & Stieffel (R.). Étude comparative des propriétés hémolytiques du plasma et du sérum des hémoglobinuriques. **Comparative Study of the Haemolytic Properties of the Plasma and Serum of Haemoglobinurics.** —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Dec. 17. Year 41. 3rd Ser. Vol. 49. No. 38. pp. 1553–1556.

It has been known for a long time that there exists a radical difference between the haemolytic properties of the plasma and serum in haemoglobinurics, and the present note is a summary of the authors' investigations on the subject.

As the result of examination of the blood of two patients, it was found that the plasma and serum behaved from the point of view of haemolysis as two absolutely different liquids, and the haemolysis produced by the serum appeared in reality to be an artificial phenomenon which could not, to any degree, be considered as the cause of haemoglobinaemia. Consequently, the classical reactions of paroxysmal haemoglobinuria ought to be considered simply as a means of demonstrating a special fragility of the blood characterized by the presence of haemolysins in the serum. They are not specific for haemoglobinuria *a frigore*, which is moreover not a special disease. The haemolytic process appears to be intimately associated with defect in coagulation.

There appears to be a series of degrees in the intensity of the haemolytic process which can be set out as follows :—

1. Plasma spontaneously haemolysed, corresponding to a haemoglobinuric crisis.
2. Serum alone spontaneously haemolysed.
3. Plasma haemolysed after Donath and Landsteiner's test.
4. Serum alone haemolysed after Donath and Landsteiner's test.
5. Plasma haemolysed after Ehrlich's test.
6. Serum haemolysed after Ehrlich's test.
7. Plasma removed after immersion of the arm in a cold bath for an hour haemolysed after Donath and Landsteiner's test.
8. Serum alone haemolysed after the above procedures.

It must, of course, be understood that on every occasion when the plasma proved haemolytic the serum was more strongly so.

W. Y.

Emile-Weil (P.) & Stieffel (R.). Influence du réchauffement sur le pouvoir hémolytique du plasma et du sérum des haemoglobinuriques. [**Influence of Warmth on the Haemolytic Power of the Plasma and Serum of Haemoglobinurics.**]—*C.R. Soc. Biol.* 1926. Jan. 5. Vol. 93. No. 38. pp. 1560–1561.

The authors have investigated in two cases of paroxysmal haemoglobinuria the effect on the haemolysin of immersing the arm in a warm bath. A ligature was applied above the elbow and the forearm immersed for an hour in a water bath at a temperature of 45° C. ; the blood was withdrawn before removing the tourniquet. The serum of the first case was, before the experiment, definitely haemolytic, but after immersion in the water bath the Donath and Landsteiner reaction was completely negative. Seven days later the blood was still modified, the plasma and serum contained haemolysin spontaneously and the Donath and Landsteiner reaction was positive only with the serum and not with the plasma, but Ehrlich's experiment, however, resulted in considerable haemolysis. After immersing the arm in a water bath again, the serum only gave a slight Donath and Landsteiner reaction.

The second case behaved in exactly a similar manner. The authors also noticed that these alterations were accompanied by changes in the power of coagulation of the blood : the clot formed before the immersion of the arm in the bath was soft and pliable, whilst that formed in blood which was withdrawn after immersion was much firmer.

W. Y.

Kikuth (Walter). Ueber Hämolysine bei Malaria. [**On Haemolysins in Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 560–564. [8 refs.]

Reference is made to the fact that haemolysis in paroxysmal haemoglobinuria is due to the action of amboceptor, which attacks the red cells at low temperatures, and complement ; and that the attack is brought to a close by the exhaustion of complement. This fact has considerable significance for a comprehension of the real cause of the genesis of blackwater fever. In this disease also there is acute blood destruction, but no haemolysin has yet been discovered. It is possible that the presence of a haemolysin is masked by the existence of an antihaemolysin, but this has not yet been shown to be the case.

Experimental work of EHRLICH and MORGENROTH indicated that the inhibitory action of the antihaemolysin is on the complement and not on the amboceptor, and later work of KUMAGAI and INONE on paroxysmal haemoglobinuria appears to support this view. LÜDKE using a technique similar to that employed by KUMAGAI and INONE—allowing inactivated haemolytic serum and a 10 per cent. suspension of washed red cells to stand at 0° C. for 30 minutes, then washing the red cells and adding complement and allowing to stand for 2 hours at 37° C.—obtained positive results in three cases of paroxysmal haemoglobinuria which gave a negative Donath and Landsteiner's reaction, and furthermore he succeeded in obtaining occasional positive results in other diseases such as haemolytic jaundice, severe nephritis, extensive burns and finally in two cases of severe malaria.

At the suggestion of NOCHT the author has examined the serum of numerous cases of malaria for the presence of haemolysin, but before doing this he performed a number of experiments on dogs which for a long time had been injected at short intervals intravenously or intraperitoneally, with homologous erythrocytes. Employing LÜDKE'S technique he succeeded in demonstrating in two dogs isolysin and in two others autolysin. Isolysin was found in dogs which for 5 weeks had been injected with canine washed red cells which had been heated at 42° C. for 1 hour; one of the dogs had in addition been injected intravenously with increasing doses of toluylendiamine. Autolysin was detected in dogs which had been injected with their own red cells treated in a similar manner. The Donath-Landsteiner reaction was completely negative in these cases. The author, however, regards it as very doubtful whether autolysin can be produced experimentally.

In all, 24 patients were investigated—9 with tertian malaria, 11 with tropical malaria, 2 with tertian and tropical malaria, 1 with pernicious anaemia and 1 with a high degree of secondary anaemia. These included cases of all degrees of severity and observations were made at all stages of the disease—before, during, and after the paroxysm, and also before and after the administration of quinine. One of the patients exhibited a marked sensitiveness to quinine, 0·1 gm. producing subcutaneous and mucous haemorrhages and 0·25 gm. haemoglobinaemia and haemoglobinuria. In none of the patients, however, was a positive Landsteiner reaction, or a Lüdke's modification of it, obtained.

The general conclusion is that removal of the antihaemolysin sufficed to demonstrate the existence of isolysin in experimental animals, but it did not succeed in demonstrating, as in paroxysmal haemoglobinurics, an autolysin in the serum of malaria cases.

[The reviewer believes that the observations of KUMAGAI and INONE and of LÜDKE on paroxysmal haemoglobinuria are capable of another interpretation: *vide Brit. Jl. of Exp. Path.*, Vol. 2, p. 115.]

W. Y.

MYCOLOGY.

CASTELLANI (Aldo) & TAYLOR (Frank E.). **Further Observations on Vaginal Monilias and Vaginal Moniliasis.**—*Jl. Trop. Med. & Hyg.* 1925. July 1. Vol. 28. No. 13. pp. 242–249. With 5 text figs. [19 refs.]

Yeast-like cells are often present in large numbers in cases of vaginitis, and are fungi of the genus *Monilia* (Persoon 1797). Two types of vaginitis associated with monilias are distinguished: a membranous type, in which thrush-like patches are present on the mucosa; and a purulent type in which there are no patches and the secretion is thick and purulent. The presence of numerous monilias in cases of chronic vaginal pruritus, a variety of pruritus vulvae and pruritus ani due to fungi of the genus *Epidermophyton*, and the occurrence of fungi of various genera in the vaginal secretion of native woman in the tropics suffering from chronic vaginitis, are also mentioned. Cases of vaginal aspergillomycosis and hemisporosis are described. The detection of lactosuria by the authors' mycological and bacteriological method of identifying carbon compounds is described.

P. Tate.

CASTELLANI (Aldo). **Notes on Three New Yeast-Like Organisms and a New Bacillus, with Remarks on the Clinical Conditions from which they have been isolated: Furunculosis Blastomycetica, Macroglossia Blastomycetica, Stomatitis Cryptococco-Bacillaris.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28. No. 12. pp. 217–223. With 10 text figs.

(1) Yeast-like organism from cases of Furunculosis blastomycetica. Five cases of Furunculosis blastomycetica, which is indistinguishable clinically from ordinary severe furunculosis, have been met with, three contracted in Great Britain and two in India, and a fungus, probably of the genus *Monilia*, isolated from them. The strains isolated from the English cases are identical, but differ somewhat from those isolated from the Indian cases, which also differ slightly among themselves. The organism from the English cases is yeast-like, the individual cells being somewhat oval or rounded, and having a maximum diameter of 3–4 microns. It is seldom detected microscopically in the pus of the boil-like lesions, in which large numbers of staphylococci are generally present. The fact that staphylococcus vaccine has no action on the condition indicates that the fungus is the real causative agent. Treatment with large doses of potassium iodide was effective, and vaccines prepared from the fungus seemed to be of some use.

(2) Yeast-like organism from a case of Macroglossia blastomycetica. Three cases of macroglossia blastomycetica were met with in Ceylon during 1903–1915. The whole tongue is greatly enlarged, occasionally painful, there may be discomfort in eating and some difficulty in speaking, and the patient cannot whistle; verrucoid patches may be almost completely absent. A yeast-like fungus with rather large, oval cells having a maximum diameter of 4–5 microns was isolated from these cases. The correct name of the fungus, which does not produce gas in any carbohydrate or develop asci, and occasionally produces a little mycelium, is *Monilia macroglossiae* Castellani (syn. *Cryptococcus macroglossiae*, Castellani). Treatment with potassium iodide is beneficial, and vaccines prepared with the fungus seem to be useful.

(3) Yeast-like fungus and bacillus living in symbiosis, isolated from cases of peculiar mycotic stomatitis. A fungus and a bacillus which apparently live in symbiosis were isolated from cases of stomatitis which clinically were totally different from thrush. The first two cases were seen in Central America, and recently an apparently similar condition has been seen in England. The lesions are generally larger than in thrush, are scarcely raised, and appear as thin, translucid films covering parts of the oral mucosa. The two organisms were separated and grown in pure culture with difficulty. The fungus, *Cryptococcus graciloides* n. sp., is very delicate, the individual cells being roundish or oval or, frequently, with a flask-like shape, and having average maximum dimensions of 3–4 microns by 2–3 microns. The fungus never develops asci or mycelium, produces one bud at a time, and does not form a thick pellicle in fluid sugar medium. The bacillus, *Bacillus vermiculoides* n. sp., is rather large, 2–6 microns long, and is often curved in shape. The optimum temperature seems to be 37° C., but it will grow at 22° C. and lower.

The biochemical and cultural characters of the several organisms dealt with in the different parts of the paper are described in detail.

P. T.

Re (Sergio). **Observations on the Cultural and Biochemical Characters of** *Monilia Castellanii* (*Cryptococcus Castellanii*) **and** *Monilia Macroglossiae* (*Cryptococcus Macroglossiae*).— *Jl. Trop. Med. & Hyg.* 1925. Sept. 1. Vol. 28. No. 17. pp. 317–319. [4 refs.]

The author's work on *Monilia* (*Cryptococcus*) *castellanii* and *Monilia* (*Cryptococcus*) *macroglossiae* is in general confirmatory of that of Castellani as regards cultural and biochemical characters; but, as a small amount of mycelium is developed by both species in certain liquid media, the author proposes the name *Monilia castellani* for the yeast-like organism described by Castellani from cases of "Furunculosis cryptococcica" *Jl. Trop. Med. & Hyg.*, Dec. 1st, 1924 and the name *Monilia macroglossiae* for *Cryptococcus macroglossiae* (Castellani).

P. T.

Miller (J. E.). **Yeast-Cell Infection in Man. Report of Case.**— *U.S. Nav. Med. Bull.* 1925. Sept.–Oct. Vol. 23. Nos. 3 & 4. pp. 229–235. [3 refs.]

According to the author 12 cases of torulosis, or yeast-cell infection of the central nervous system, have previously been described, all of which terminated fatally. The condition is rarely recognized in life, as the symptoms generally simulate those of non-suppurative meningitis. Diagnosis can be made only by lumbar puncture and examination of the spinal fluid for the presence of yeast cells. What is regarded as having been a case of torulosis is described.

The patient, a male aged 54, was admitted to the naval hospital San Diego, California, on January 14th, 1925, under the diagnosis "senile dementia." The chief symptoms before admission were prolonged weakness, loss of weight, severe headache, and pains in the arms and legs. All the symptoms were intermittent. On admission the temperature, pulse, and respiration were normal, but the temperature became slightly elevated after a few days. The patient became progressively weaker

and died on February 13th, 1925, of profound asthenia. An autopsy revealed seven small roundish tumours in the brain. The membranes were thickened and adherent, and there was moderate sclerosis of the hemispheres. Sections of the cerebrum and cerebellum showed numerous irregular cavities filled with yeast-cells.

P. T.

Jiménez (J. B.). Nota clinica acerca de tres casos de actinomicosis humana. [**Three Cases of Actinomycosis in Man.**]—*Gac. Méd. de Caracas.* 1925. June 30. Vol. 32. No. 12. pp. 180–182.

Actinomycosis in man in Maracaibo appears to have been first described in 1907; during the succeeding 6 years there were occasional cases, and after that none till 1921. The author here records three more. In the first the tumour involved the right maxillary region, in the other two the thorax. The second was not diagnosed till just before death. The third complained of ill-defined pain referred to the shoulder but for a long period no physical signs could be detected; there was no fever or expectoration and, in fact, the patient was regarded as a "tuberculophobe" and a hypochondriac. Later, an abscess pointed at the ninth intercostal space in the posterior axillary line, the fungus was found and cultivated. It is said to be identical morphologically with *Discomyces bovis* and *D. israeli.*

H. Harold Scott.

Castellani (Aldo), Douglas (Mackenzie) & Thompson (E. T.). **Notes on Mixed Mycotic Infections of the Bronchi. The Mixed Monilia – Anaeromyces Infection.**—*Jl. Trop. Med. & Hyg.* 1925. July 15. Vol. 28. No. 14. pp. 257–261. With 6 text figs. [11 refs.]

In this paper simple broncho-moniliasis and simple broncho-anaeromycosis are first dealt with. Of broncho-moniliasis three varieties are distinguished, primary, secondary, and saprophytic, the virulence of the monilia isolated, when injected intravenously or intrapulmonarily into rabbits, differing in each variety. Monilias are placed in eleven groups in accordance with their action on certain carbohydrates. Broncho-anaeromycosis is hardly to be distinguished clinically from pulmonary tuberculosis or haemorrhagic broncho-moniliasis. Fungi of the genus *Anaeromyces*, which was created by the authors for the organisms isolated from certain chronic bronchitic conditions, are not pathogenic to guineapigs or rabbits. Several cases of apparently true mixed monilia anaeromyces infections have been met with. Both organisms are abundant while severe symptoms last and become scanty or disappear when the bronchial condition improves or is cured. The specific treatment for either broncho-moniliasis or broncho-anaeromycosis alone is ineffective, but a cure is effected by combining the treatments, and this is regarded by the authors as indicating the aetiological importance of both organisms.

P. T.

Castellani (Aldo). **Bronchomycoses.**—*Milit. Surgeon.* 1925. Aug. Vol. 57. No. 2. pp. 113–133. With 12 text figs.

In a long general paper it is stated that bronchomycosis may be due to species of fungi belonging to seventeen genera, but in all cases the symptoms are somewhat similar. In mild cases there are signs of slight

bronchitis, and in severe cases there are all the symptoms of phthisis. Ten varieties of bronchomycosis associated with fungi belonging to a corresponding number of distinct genera are dealt with in more or less detail. In connexion with bronchomoniliasis it is stated that the specific determination of monilias is only possible with recently isolated strains, as some species may lose the power of fermenting some carbohydrates after a time, and that monilias presenting the same biochemical reactions may differ greatly in pathogenicity. Three groups of monilias are distinguished: non-virulent strains which when inoculated into rabbits or guineapigs do not produce any sign of sickness; virulent strains which kill rabbits or guineapigs when injected intravenously or intrapulmonarily but do not produce a nodular condition of the lungs; and virulent strains which produce a nodular condition of the lungs when injected intrapulmonarily into rabbits. The mycoses associated with these strains are termed saprophytic, secondary, and primary bronchomoniliasis respectively. Two illustrative cases are described. Bronchonocardiasis is due to fungi of the genera *Nocardia* and *Cohnistreptothrix*. Two types are distinguished, granular and agranular according as fungal granules are present or not in the sputum. The agranular type is generally chronic, but the granular type is more amenable to treatment. Illustrative cases of both types are described.

An anaerobic fungus, *Anaeromyces bronchitica*, Castellani, Douglas and Thompson, belonging to the order Microsiphonales, was isolated from certain cases of bronchitis. It is not pathogenic for guineapigs, rabbits, or mice, but its aetiological importance in certain cases of bronchitis is indicated by the facts that it rapidly decreases in amount in the sputum as the bronchial condition improves and finally disappears, and that all symptoms disappear when an anaeromyces vaccine is used without any other treatment.

Bronchial oidiosis, saccharomycetosis, cryptococcosis, endomycosis, and williasis are also briefly dealt with.

P. T.

Jaumain (D.) & Colard (A.). Sur les caractères d'un champignon du genre *Monilia* isolé dans un cas mortel de mycose pulmonaire, contracté au Congo belge. [**Characters of a Monilia isolated in a Fatal Case of Pulmonary Mycosis in Belgian Congo.** –*C. R. Soc. Biol.* 1925. Sept. 30. Vol. 93. No. 28. pp. 858–860.

The authors describe what appears to be the first case of bronchomoniliasis reported from the Belgian Congo. The patient was an officer sent home suffering from an affection simulating phthisis, but the Koch bacillus was not found in the sputum, and inoculation of guineapigs was negative. Oval yeast-like cells, 4–5 microns long by 2–3 microns wide, with very refringent membranes, were present in the sputum. They were often united in pairs by slender necks. Cultures were obtained on Raulin's solution and on Sabouraud's glucose agar.

On solid sugar media, at the optimum temperature of 37° C., a thick creamy-white culture was developed in 24 hours, the colour of which scarcely changed with age. The biochemical characters are described in detail. The action on sugars was observed by adding some bromothymol blue to the medium and adjusting the pH to 6·7 before inoculation. The biochemical characters, especially its power of liquefying gelatine, separate

it from any species described by Castellani. Intraperitoneal and subcutaneous injections of spore emulsions were innocuous to rabbits; but intravenous inoculation of one-tenth a 24 hours' culture on Sabouraud's medium was fatal in 24 hours, and a similar intra-pulmonary inoculation was fatal in about 48 hours. Cultures from the organs were positive in the fatal cases.

P. T.

Colard (A.) & Jaumain (D.). Sur un cas de moniliase pulmonaire. [**Pulmonary Moniliasis.**]—*Bruxelles Méd.* 1925. Oct. 18. Vol. 5. No. 51. pp. 1503–1506. With 1 text fig.

This paper is a detailed account, from the clinical aspect, of the case described by the same authors in the paper summarized above. Certain peculiarities of the radioscopic image, and various methods of treatment which were used ineffectually, are described. The termination was fatal.

P. T.

de Magalhães (Octavio). Mycose Pulmonar pelo "Oidium brasiliensis" (Oct. de Magalhães, 1912). [**Pulmonary Mycosis due to *Oidium brasiliense*.**]—*Sciencia Medica.* 1925. Nov. 30. Vol. 3. No. 11. pp. 659–672. With 11 figs. on 6 plates. [13 refs.]

The author gives an account of generalized infection with *Oidium brasiliense* in human cases naturally infected and in experimental animals. This mould was first noted in 1912 in Bello Horizonte. It grows in all the ordinary media but best on Sabouraud-maltose. It ferments all the usual sugars and liquefies gelatin in 12–14 days. Though it is often generalized in experimental inoculation there is a tendency to pulmonary localization. The disease produced may be acute or chronic. In the former there are fever, loss of appetite, persistent cough, wasting, diarrhoea, cavitation of the lungs, and nephritis, but no night-sweats and no haemorrhagic expectoration. In the chronic forms there may be a pleuritic type without fever at first; later, signs of consolidation of the lungs succeeded by breaking down of tissue to cavitation. There are sweats but not so copious as in phthisis. In others the type is more bronchopneumonic, with mucoid, muco-purulent, or blood-tinged expectoration, but no fever. At autopsy the signs are those of interstitial pneumonia with perhaps small abscesses; the kidneys may also contain purulent foci and there are haemorrhages in the spleen.

Experimentally, monkeys tend to develop the acute form; guineapigs and rabbits the more chronic. Mere insufflation has produced the disease in squirrel monkeys.

Diagnosis is made by recognition and growth of the mould, by a positive intradermal reaction with the Oidium and by complement-fixation tests. The prognosis depends upon accurate diagnosis. Treatment by potassium iodide, 2–4 gm. daily, gives the best results. Mercurial and arsenical preparations have no influence on the course of the disease.

H. Harold Scott.

Nasso (Ivo). Un caso di broncomoniliasi. [**A Case of Bronchomoniliasis.**]—*Pediatria.* 1926. Jan. 1. Vol. 34. No. 1. pp. 37–42. [7 refs.]

A child, 8 years of age, was brought to hospital with acute abdominal pain, diarrhoea, a troublesome cough with blood-stained expectoration, and a history of wasting and increasing pallor. Erythrocytes numbered

1,500,000 per cmm., with haemoglobin 45 per cent. and leucocytes 7,400. *P. vivax* was found. From the sputum *Monilia pinoyi* was cultivated and this, injected intravenously, killed a guineapig and a rabbit. Treatment consisted first of quinine, later of arsenic and potassium iodide. The last was given by intramuscular injection. Considerable improvement followed, but a certain degree of pallor and irregular fever to 38° C. persisted; the cough was reduced in frequency and the sputum no longer contained blood.

H. Harold Scott.

Cleland (J. Burton). **Aspergillosis of the Pleura with Sclerotium Formation.** —*Med. Jl. Australia.* 1924. June 28. 11th Year. Vol. 1. No. 26. pp. 634–635.

In the material removed from an empyema following a gunshot wound in the right chest of a private soldier aged 22 years in the Coast Hospital, Sydney, numerous brownish sclerotia, 1·5 to 2 millimetres in diameter, were found. Numerous conidiphores arose at the periphery of the sclerotia, and terminated in ovoid formations 15 to 18 microns in diameter, from which arose numerous claviform sterigmata about 5·5 microns long. The spores were brownish, smooth, spherical and about 3·5 microns in diameter. The surface hyphae and the conidiophores were brownish. The fungus was not cultivated.

P. T.

YAWS AND SYPHILIS.

ARMSTRONG (John S.). **The Treatment of Yaws (Framboesia tropica) in Western Samoa.** *Mandated Territory of Western Samoa, New Zealand, Ann. Rep. Dept. of Health for Year ended 31st March, 1925.* pp. 16–20. [9 refs.]

In an appendix of 5 pages J. S. Armstrong, R.M.O., Apia, deals with the progress of the anti-yaws campaign which was begun in November-December 1923. 351 males and 344 females received 1,892 treatments, 536 by three injections, 135 by two injections, 24 by a single injection; the standard treatment aimed at being three intravenous injections of 0·6 grammes N.A.B. at weekly intervals for an adult male and appropriate smaller doses for women and children and intramuscular injections for babies carried out by an itinerant treatment team consisting of an M.O. and assistants. Eight months later these cases were again examined and the results noted. The figures thus obtained were analysed; a condensed age incidence table yields the following figures:—1–5 years — 137; 6–10 years — 205; 10–15 years — 115; 15–20 years — 50; above 20 — 188.

"The cases were divided into the following types: (1) Primary sores; (2) generalized secondary papular rash; (3) dermatitis, secondary; (4) "crab" tonas; (5) secondary ulceration; (6) gummatous infiltration and ulceration; (7) synovitis; (8) dactylitis; (9) tibial nodes and sabre-blade tibiae; (10) dermatitis, slaty; (11) plantar and palmar dermatitis; (12) hyperkeratosis.

"The number of each type injected and the number of relapses is shown in the following table:—

	Type of Case injected.												
	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	Totals.
Cases receiving three injections.													
Number of cases injected	6	196	110	89	5	37	1	2	3	28	54	5	536
Number of relapses	5	32	6	8	—	2	—	—	—	—	—	—	53
Percentage of relapses	83	16·3	5·45	8·9	—	5·4	—	—	—	—	—	—	10
Cases receiving two injections.													
Number of cases injected	1	41	30	22	2	14	1	—	—	9	13	2	135
Number of relapses	1	13	3	1	—	2	—	—	—	—	—	—	20
Percentage of relapses	100	41·4	10	4·5	—	14·3	—	—	—	—	—	—	14·8
Cases receiving one injection.													
Number of cases injected	—	7	8	1	1	4	—	—	—	1	1	1	24
Number of relapses	—	2	2	—	—	—	—	—	—	—	—	—	4
Percentage of relapses	—	28·5	25	—	—	—	—	—	—	—	—	—	16·6

It is noted that groups (1) to (3), i.e., the contagious stages, are limited to children in the first decade; groups (4), (5), (7), (8) were seldom over 15 years.

"At the present time some 54,000 injections have been given on the three-injection system without causing a single case to become reinfected with yaws, so that it may be fairly safely assumed that we are not removing the immunity conveyed by an attack of the disease . . . At the present time we endeavour to keep an immune adult population, by merely treating cases sufficiently to cure the infective primary and secondary rashes, which may also prevent the occurrence of the disabling tertiary conditions. This we hope will allow a large proportion of the present children to reach adult life without becoming infected, and so gradually exterminate the disease without risking a serious epidemic of yaws amongst the adult population before we have the personnel to control it.

"The immunity which an attack of yaws gives the Samoans in preventing their infection with syphilis, seems to be very great, as we have never seen a case of syphilis in a Samoan."

[The quotations are given at length above as the deductions made may not be found to hold good. First with regard to the alleged immunity to syphilis. To prove that the Samoans are immune to that disease as the result of their having had yaws it would be necessary to show that they had had the chance of infection with syphilis and resisted it, whereas nowhere in this Annual Report is such evidence forthcoming; the only reference to that disease appears under the Public Health section to the effect that "the Chinese coolies have a small percentage of syphilitic cases, but there appears to be no evidence of their having passed the infection on to the Samoans." As to the adequacy of the three-injection system—a method which gives a 16·3 per cent. relapse rate in secondary cases within 8 months can hardly be looked upon as satisfactory and that it is wise to convert all these cases which have not relapsed into a possibly vast latent-infective population is open to doubt. What percentage of these children now with latent infections may be going to develop tertiary manifestations in later years? Only time will show. The same is true of the short-course treatment campaigns in East Africa and Dutch East Indies. No Wassermann reactions are reported. Referring to relapse no mention is made of the clinical signs on relapse; presumably the secondary cases showed further crops of granulomata, but it would be interesting to know whether the primary cases developed a secondary eruption. That none of the late palmar dermatitis and hyperkeratosis cases relapsed during the 8 months is rather what might be expected but is no criterion they will not do so later. The nomenclature used in the grouping of the cases may be criticized. No mention is made of cases of gangosa, J.A.N. or goundou. A point of interest is that to enable the campaign of treatment by N.A.B. to be carried out a £1 medical tax was levied on population but no mention is made of the cheaper bismuth preparations.]

H. S. Stannus.

McKenzie (A.). **Observations on Filariasis, Yaws and Intestinal Helminthic Infections in the Cook Islands with Notes on the Breeding Habits of** *Stegomyia pseudoscutellaris*.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 138–149. With 4 text figs.

Cases of yaws numbering 200 were treated in twelve months. The age incidence is given as: under 1 year 23; 1–4 years 35; 4–8 70; 8–12 59; 12–20 26; over 20 59, sexes being equal. The primary yaw in

26 cases observed was sited as follows: —legs 11; face 10; ear 1; hand 1; chest 1; arm 2. The large number on the face is accounted for by a child's habit of picking at the nose, etc. In three of the leg cases the primary lesion was seen to develop at the edge of a traumatic ulcer; with treatment the yaw disappeared leaving the ulcer as it was before. The author believes that the primary lesion rarely appears at the site of a breach of surface which has healed aseptically. The secondary eruptions presented nothing unusual, initial fever and joint pains were not seen, neither was any desquamative condition ever found. The various affections of the soles of the feet produced by yaws are described. Tertiary manifestations (16 cases) included gummata of skin and bone and five cases of gangosa, all of whom responded well to N.A.B. Of 120 cases seen 11 months after treatment (N.A.B., total 1·2 gm.) none showed any clinical manifestation of the disease, but 2 cases, each 11 months after treatment, developed a typical primary yaw on a traumatic ulcer followed in 2–3 weeks by a secondary eruption. These cases the author considers to be reinfections and not relapses. In one case a Hunterian chancre and mucous patches in the mouth co-existed with a typical yaws eruption on the body.

H. S. S.

Dupuy (L.). Contribution à l'étude clinique et au traitement du pian. [**Clinical Study and Treatment of Yaws.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 69–78.

In the extreme south of the Katanga 155 cases of yaws were dealt with in 3 years. The disease appeared to become epidemic towards the end of the dry season and affected the Ba-lamba and Ba-temba in certain villages on the Luapula river but rarely the Mulala people. The local name of the disease is *bonono*. There follows a general account of the clinical manifestations of the disease now well known and, under treatment, a plea for larger doses of N.A.B. to be used in routine treatment if cure without relapse is to be effected. Thus he advocates 3 or 4 injections or 0·75, 0·75, 0·9, 0·9 gm. at 4-day intervals. No case of gangosa, common in Haute Katanga, was seen in this southern area, but 2 cases of J.A.N. were noted.

H. S. S.

Callanan (J. C.). **Some Observations on Framboesia Tropica, made in a District of Kikuyu Province, Kenya Colony.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Nov. 19 & Dec. 17. Vol. 19. Nos. 5 & 6. pp. 312–316. With 4 figs. on 1 plate.

This paper, which is a summary of a thesis presented at Dublin, is a very valuable contribution to the study of yaws in East Africa. References to the subject matter of the thesis will be found in this *Bulletin*, 1926, Vol. 23, pp. 9–10.

H. S. S.

Nunez (Solon). **Suspected Yaws in Costa Rica.** —*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 425–428. With 1 text fig.

On receipt of the report by Fallas and von Bülow of suspected cases of yaws at Puntarenas which formed the subject of a paper reviewed in this *Bulletin* (*ante*, p. 16), the author, accompanied by

Dr. Taylor, chief of the laboratory of public health, proceeded there to observe them, but he adds nothing to the previous article except a photograph of the single patient he saw. It represents a man with a condition which certainly resembles yaws. It will be remembered, however, that the description of the evolution of the eruption was not typical, that microscopical examination of the exudate from the lesions was negative but that the Bordet-Wassermann reaction was positive and the results of treatment by neosalvarsan immediately successful.

H. S. S.

Ayuyao (Conrado D.). **Tertiary Manifestations of Yaws in the Larynx.** —*Jl. Philippine Islands Med. Assoc.* 1925. Nov. Vol. 5. No. 11. pp. 331–336. [19 refs.]

Two cases are reported, a girl and a boy, aged respectively 11 and 12 years, with a history of yaws 3 and 9 years before onset of illness commencing with cough followed by pain in the chest, sore throat, hoarseness and in the case of the boy urgent dyspnoea for which tracheotomy was performed on three occasions. There was some general adenitis in both cases but both were afebrile and no symptoms appeared except those localized to the nasopharynx and larynx. Wassermann reaction weakly positive in both, the blood being taken just after first treatment had been given.

The lesions in the girl are thus described :—

" *Localized lesion.*—Pharynx and larynx, the faucial pillars are worn out and so is the soft palate, the uvula being absent. The faucial tonsils are moderately enlarged and present many ulcers. The posterior pharyngeal wall presents also ulceration and cicatrice is being formed. The epiglottis is markedly ulcerated, so much so that it is reduced to a mere stump. The arytenoids are infiltrated. The vocal cords are much ulcerated, the left absent. The ulcers as a rule have clean-cut edges with a low degree of inflammation around them and with dirty whitish exudate covering the base."

Those in the boy as follows :—

" *Localized lesion.*—Pharynx and larynx, the faucial tonsils absent. The uvula presents a small ulcer at its tip and a larger one at its left side. There are two other ulcers over the soft palate, much larger than those of the uvula. They are circular in shape with undermined edges. The pharynx presents similar but small ulcers. These ulcers are covered with dirty whitish exudate, not pus. The surrounding tissue shows a low degree of inflammation. The right vocal cord is practically fixed in its place and the left can move to a limited extent. Both cords are much thickened and just below them are thick infiltration and granulations, producing stenosis of the lumen. The arytenoids also show infiltrations.

" *Nose.*—There is a small swelling, with slight tenderness over the left nasal bone. This swelling is not congested and is connected with the bone itself. The turbinates show some degree of infiltration."

Both were treated with neoarsphenamin with good results. There was no history of syphilis or tuberculosis in the parents [no mention of W.R.] but on X-ray findings in the case of the boy a diagnosis of pulmonary tuberculosis was made though the sputum was negative for tubercle bacilli.

The author then discusses the possible relationship of his two cases with gangosa, and though in case 2 his first diagnosis was that disease, he prefers to consider both his subjects as cases of "Tertiary Manifestations of Yaws in the Larynx"—the first to be described. [There would, however, appear to be no reason why they should not be placed among those cases called gangosa leaving aside for the moment the question of the etiology of that condition.]

H. S. S.

VAN DEN BRANDEN (F.). L'emploi du stovarsol dans le traitement des affections pianiques. [**Stovarsol in the Treatment of Yaws.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 111–118. With 11 charts.

After pointing out the necessity of pushing the treatment of yaws up to the point when the Wassermann reaction is negative and not merely being content to see the clinical manifestations disappear this observer from the Congo gives his experience with stovarsol in the treatment of 13 cases of yaws, using doses a good deal larger than have been hitherto advocated. Commencing with 1 gramme, 1½, 2 and 3 grammes are given on successive days (for children half these doses) and dosage is kept up till a total of the drug given in gramme weight equals the weight of the individual in kilos. Among 11 of the 13 cases in which the Wassermann reaction was performed, in 7 the reaction became negative and in 4 it remained positive at the end of treatment, even after 54 grammes stovarsol in one case. He believes that in stovarsol we have a drug equal to N.A.B. and owing to ease of administration, etc., one which is superior in some respects.

H. S. S.

LEFROU (G.). Contribution à la posologie du stovarsol : le stovarsol à doses hebdomadaires dans le pian. [**Dosage of Stovarsol: its Administration weekly in Yaws.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 661–669. [3 refs.]

The method here under consideration consists in the administration at weekly intervals of doses of stovarsol of 0·075 gm. to 0·08 gm. per kilo weight of patient with a maximum of 4·5 gm., dissolved in water in the morning before food. This works out at from 14 to 18 tablets of 0·25 gm. Three doses are given. A few days after the second dose all activity in the lesions had ceased and in the majority of secondary cases of yaws all lesions had disappeared. These cases (20) were only under observation for a few weeks but are spoken of as cures. No Wassermann reaction performed. The object of the paper is to draw attention to this method of administration of larger doses at longer intervals.

H. S. S.

i. IRVINE (A. C.). **Bismuth in the Treatment of Yaws.** [Correspondence.]—*Kenya Med. Jl.* 1925. Dec. Vol. 2. No. 9. pp. 271–272.

ii. ——. **Syphilis or Yaws.** [Correspondence.]—*Ibid.* p. 273.

i. The author's impression is that under 1 per cent. of 2,500 cases of yaws treated [dosage not stated] return for treatment, which the author believes corresponds with the relapse rate.

ii. Regarding the question whether yaws and syphilis are different entities or one and the same disease the author points out, in favour of the former opinion, that the age incidence is entirely different for the two diseases in the province of Kenya in which he has been working.

H. S. S.

Gutierrez (Perpetuo D.) & Villasenor (Pedro N.). **The Duality of Yaws and Syphilis.**— *Jl. Philippine Islands Med. Assoc.* 1926. Jan. Vol. 6. No. 1. pp. 5–11. [13 refs.]

In this contribution to the discussion upon the unity or duality of yaws and syphilis, the authors, who side with the majority of authorities in believing in separate disease entities, pass in review under the headings of geographical distribution, age, social condition, transmission, etiology and clinical manifestations, the facts as already well known. Sections on histopathology, serology, experimental transmission follow but contain no essentially new data. In that the histopathology of yaws has received but little attention of late years the quotation from MacLeod (*Brit. Med. Jl.* 1901 Vol. 2, p. 797) is given below, with the suggestion that repetition of this research would be useful.

"Epidermis.

"There is a marked proliferation and downgrowth with elongation of the rete pegs.

"There is swelling, vacuolation and degeneration of the epithelial cells with some edema of the interepithelial spaces.

"Not infrequently there are sharply circumscribed areas in the epidermis containing collections of polymorphonuclear leucocytes and detritus (the miliary abscesses) in which spirochaetes are not infrequently found.

"Basal layer uninterrupted.

"Disappearance of pigment in the affected areas.

"Transitional layers imperfect.

"Cornification, marked hyperkeratosis and parakeratosis with deposition of leucocytes and débris between horny lamellae.

"Changes in the corium.

"1. Blood vessels are dilated, there is no thickening of the vessel walls or endothelial proliferation. Blood vessels persist even in the middle of the granuloma.

"2. Cellular infiltration consists of plasma cells most marked around the blood vessels and glands. The infiltration rapidly becomes diffuse, there is no tendency for it to be localized, there is no definite arrangement of the plasma cells in rows, there are no giant cells, there is no tendency to organization.

"3. The fibrous stroma is thinned where infiltration is most marked.

"4. The appendages are not affected.

"MacLeod further differentiates yaws from syphilis histologically, and says :—

"(*a*) Cellular infiltration. The plasma cells are not definitely clustered around the vessels in yaws as they are in syphilis, nor do they ever form foci suggesting tuberculous nodules, as they do occasionally in the latter disease. They are seldom arranged in rows, which frequently occurs in syphilis. Large multinuclear cells (chorioplaques) and true giant cells which may be present in syphilis, are absent. No hyaline degeneration, such as may be found in syphilis, is detected in the plasma cells.

"(*b*) Fibrous stroma. The rarefaction of the collagen is more marked in yaws than in syphilis; organization is not detected, and colloidal degeneration such as occurs in a syphilitic gumma, is absent.

"(*c*) Epithelium. The proliferative changes in the epidermis in yaws are not only equalled in syphilis in the condylomata, while the marked tendency of the stratum corneum (hyperkeratosis), which is an invariable characteristic in yaws, is unusual in syphilis."

H. S. S.

GOODMAN (Herman). **Generalized Cutaneous Syphilis: Clinical Differentiation. III. Frambesia Tropica and Syphilis. A Comparison with Especial Reference to the Treatment of Paresis with Malaria.**—*Amer. Jl. Syph.* 1926. Jan. Vol. 10. No. 1. pp. 64–88. With 36 text figs.

Claiming the "good fortune to have had actual clinical experiences with both diseases in the tropics and in temperate zones", the author gives a rather rambling account of the two diseases containing nothing new and no observations of interest. He believes that there is no tertiary phase in yaws without giving the evidence upon which he bases this opinion. This and some other opinions expressed by Dr. Goodman would not meet with general acceptance. No statistics and no geographical data are given.

H. S. S.

NICHOLS (Henry J.). **Experimental Immunity in Syphilis and Yaws.**—*Amer. Jl. Trop. Med.* 1925. Nov. Vol. 5. No. 6. pp. 429–437. With 2 text figs. [11 refs.]

Adverting to the opinion expressed by PARHAM that the Samoans are protected from syphilis by previous infection with yaws and to explanations which might be offered for any such possible cross-immunity between the two diseases, the author refers to the history of experimental infections in rabbits by *T. pertenue* and *T. pallidum* and to some recent work by CHESNEY and KEMP. These authors showed that if an infection of syphilis has persisted in a rabbit for over three months and the rabbit is then treated with arsphenamin and cured as has been shown possible, the animal is then immune and cannot be successfully reinoculated with syphilis. These results go to prove that, contrary to the old idea that resistance to inoculation is an evidence of latent infection, there is a true immunity after the infection is cured, the important point being the length of time which the infection has persisted in the animal: if animals are tested early in the disease a large number of them can be reinfected; if treated late they are nearly all immune. The author therefore carried out a series of experiments to show whether this time factor entered into the cross-protection of yaws against syphilis. Though their number was small and the evidence not absolutely complete the results go to show that experimentally a partial immunity against syphilis can be demonstrated in rabbits which have been infected a long time with yaws and then cured by arsphenamine—this being comparable, it is suggested, to some true immunity to syphilis in those who have suffered a long course of untreated yaws in childhood. As to the identity of the diseases the experimental protection of syphilis against itself is so much stronger

than that of yaws against syphilis that the argument fails. The author alludes to some interesting facts that have come to light while working with various strains of *T. pallidum* and *T. pertenue*, namely the definite varieties of strains met with and the fact that each strain will in each passage produce its particular and characteristic type of lesions in the inoculated animal.

H. S. S.

Ikegami (Yutaka). [**Studies on Experimental Framboesia. Communication I.**]—*Hifuka Kiyo* (*Arch. of Dermat.*). 1925. Apr. Vol. 5. No. 3. [Summarized in *Japan Med. World.* 1925. Dec. 15. Vol. 5. No. 12. pp. 365–366.

Records the successful inoculation of a rabbit (scrotum) from a yaws papule in a South Sea Island boy with development of a papular lesion and passage through three generations.

H. S. S.

Voegtlin (Carl) & Dyer (Helen A.). **Reinoculation as a Criterion of Cure of Experimental Syphilis, with Reference to Arsphenamine, Neoarsphenamine, and Sulpharsphenamine.**—*Public Health Rep.* 1925. Nov. 13. Vol. 40. No. 46. pp. 2511–2519. [8 refs.]

As a matter of interest associated with the research described in the title of this article, a series of experiments was made to determine whether rabbits which had been previously inoculated with a syphilitic virus and then treated with the above-mentioned drugs (as in those to be tested with reinoculation of *T. pallidum*, would react to inoculation with *T. pertenue*. Results showed that such animals may be resistant to this reinoculation with *T. pertenue* as to *T. pallidum*. These findings are, however, difficult to interpret in the absence of other investigations. Successful cross inoculation (first syphilis then yaws) in a monkey has been described by Neisser and co-workers. If a similar result could be obtained in untreated rabbits it would indicate that the treated rabbits, on account of treatment, had developed a refractory state, as far as the production of a local lesion is concerned, to inoculation with *T. pertenue*.

H. S. S.

Ganter (M.) & Kuijer (A.). Syphilis van het Colon Transversum. [**Syphilis of the Transverse Colon.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 766–772. With 2 figs. on 1 plate.

A Javanese soldier showed symptoms of obstruction of the intestine with a tumour in the left upper abdomen and serious emaciation. Though syphilis was denied and the Sachs Georgi test was negative, specific treatment, tentatively applied, first with potassium iodide, later with mercury and arsphenamine, brought about a complete recovery. The course of the X-ray examination is described in detail and illustrated with two pictures.

W. J. Bais.

Mulder (D. G.). De invloed der moderne kultuur op het verloop der syphilis bij den Soendanees. [**The Influence of Modern Culture on the Course of Syphilis in the Sundanese.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 816–820.

This is an abstract of the author's MD. thesis. Many obstinate and malignant diseases of modern man are rare or absent in the primitive aborigines of tropical countrris (diabetes, gout, blood diseases, tabes, paralysis of the insane, etc.). Taking syphilis as an example, Mulder thinks that its course is materially modified in the modern native of somewhat higher standing in comparison with the village man, especially as regards the greater frequency of parasyphilis in the former. He states that modern chemical treatment interferes with the tendency to natural immunization which the disease itself possesses.

W. J. Bais.

zur Verth (M.). Zum Problem der juxtaartikulären Knoten-bildungen. [**Juxta-articular Nodules.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 400–404.

The author believes that both yaws and syphilis may be causative factors in the condition known as juxta-articular nodules, and noting the comparative rarity of the affection in Europeans, gives a résumé of a case under his own care in 1923—a ship's engineer aet. 47 with typical nodes about the elbows who had contracted syphilis in 1907 and received practically no treatment. The nodules appeared in 1917 while the man was a prisoner in Malta. Wassermann reaction was +++ and a syphilitic psoriasis appeared on the arms. A nodule was excised and sections reported on by Professor Fahr. They showed hyaline fibres with collagenous change, and infiltration by lymphocytes and plasma cells ; perivascular infiltration was also noted, pointing to a syphilitic etiology. The part played by trauma is discussed and notes of a second case are given—an orthopaedic mechanic aet. 30 with lesion of elbow and finger ; Wassermann reaction negative and syphilis excluded. A nodule excised gave similar findings. Reference is then made to Hauck, who described "subcutaneous fibrous nodules on the dorsal surfaces of the first interphalangeal joints of the fingers" (*Med. Klin.* 1924, p. 1569) as not very rare in his surgical clinic in Berlin, the condition chiefly affecting the ulnar side of the joint of the middle finger, though any finger of either hand may be the seat of nodules, the exception being the thumb ; they may develop at the same time or appear at intervals ; they are rounded or oval in shape, microscopically composed of fibrous tissue, and do not return after removal. Reference is also made to a case by Konjetzny and to the condition called akrodermatitis chronica atrophicans in which Jessner has described subcutaneous nodes about the elbows and fingers (*Arch. f. Dermat. u. Syph.* Vol. 134, p. 486 and 294) and to which the author finds his cases bear some analogy. No references are given to any but German authors.

Professor zur Verth does not go so far as to pronounce the nodules in his cases to be identical with those met with in the tropics but he believes the underlying causes are closely allied. [This opinion has been put forward by others. Generally stated the idea is that these nodules are formed as the result of a tissue reaction to a local deposit of organisms, be they the spirochaetes of yaws or syphilis or some other living parasites, the reaction being in some degree determined by racial

peculiarity (maximum fibrous tissue reaction of black races), the sites being determined by trauma in some form—actual injury, pressure, over-use of joint, etc. On the other hand, other observers believe that there are a number of disease entities characterized by nodule formation which should be distinguished from J.A.N., a condition *sui generis* of unknown causation or possibly due to yaws, and that these several conditions may be distinguished histologically if not clinically.]

H. S. S.

Genner (Viggo). Sur l'étiologie des nodosités juxta-articulaires. [**Etiology of Juxta-Articular Nodules.**]—*Ann. de Dermat. et de Syph.* 1925. Nov. 6th Ser. Vol. 6. No. 11. pp. 675–681. With 3 figs.

Working in the island of Nias, near Sumatra, the author had through his hands some four to five thousand native patients among whom were 2,000 cases of yaws but no case of syphilis. His attention was attracted to the large incidence of J.A.N. among his yaws cases, which indeed amounted to 5-10 per cent. The nodes were found for the most part about the ankle joints—a distribution which is attributed to the factor of trauma caused by the wearing of heavy anklets. Notes were made of 40 cases of J.A.N.; all had had yaws and all responded in some degree to treatment with N.A.B. No cases were seen among children. The author believes in a yaws pathogeny. Nodes from four cases were examined histologically; spirochaetes were not found. The nodes consisted for the most part of dense fibrous tissue with areas of fibroblasts. The tissue showed in places hyaline changes. The epidermis and true skin were thinned immediately over the tumour and an infiltration by lymphocytes and plasma cells around the sweat glands was found.

H. S. S.

Jordan (Arthur). Gelenkerkrankung und juxta-artikuläre Knoten infolge von unerkannter Syphilis. [**Affection of Joints and Juxta-Articular Nodules following Unrecognized Syphilis.**] —*Dermat. Ztschr.* 1925. Nov. Vol. 45. No. 5-6. pp. 263–270. With 2 figs. [25 refs.]

After referring to the difference of opinion which various observers hold regarding the incidence of joint lesions as opposed to bone affections in inherited syphilis, the author points out that on the whole they are rare conditions, though commoner in some countries and among some races than in others. He then cites the case of a peasant woman aged 50 who during a period of 5 years successively developed bone pain in the shins worse at night, swelling about the knee joints, fingers and wrist joints, a breaking down swelling of the left shin and finally hard painless moveable subcutaneous nodules from a pea to a hazel nut in size in the neighbourhood of the elbow joint. The previous history was good—5 children all alive, no abortions, no history of syphilis, but the Wassermann reaction was marked by positive and von Pirquet negative. Here then were associated a gummatous ulceration over tibia and periarthritis of finger joints, wrists and knees causing complete disability owing to pain, limitation of movement and muscular wasting and as shown by X-ray examination a diffuse atrophy of all the bones of both hands but no change in joint surfaces—with a

condition resembling juxta-articular nodules. After eleven injections of the Russian bismuth preparation Bijochinol followed by yatren and pot. iod., function was restored in great part to all the joints, pain and swelling relieved and almost complete disappearance of the nodules was effected. The rest of the article is given up to references to cases, described by other authors, of syphilitic arthritis and should be consulted by all interested. Jordan refers to the histological picture presented in sections of two nodules from his case. In one the structure resembled a gumma, in the other the resemblance to subcutaneous sarcoid was noticeable.

Thus has arisen the confusion which exists in dealing with the conditions which have been named syphilitic subcutaneous fibromata, subcutaneous sarcoid and juxta-articular nodules.

H. S. S.

Bernard (R.) & Broden (A.). Un cas de nodosités juxta-articulaires asymétriques chez un Européen au Congo Belge. [**A Case of Asymmetric J.A.N. in a European in Belgian Congo.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 25–32. With 2 figs. on 1 plate.

The authors report what they believe to be the tenth case of this condition occurring in Europeans, in a man of 32 years of age with some 12 years' service in Africa, in whom the nodules appeared about the left elbow after 5 years' residence. Some of the nodules had softened and discharged their contents, leaving papery depigmented scars. There was no history of syphilis or yaws but the Wassermann reaction was fully positive. A long series of injections of sulpharsenol resulted in diminution in size of the remaining node and the Wassermann reaction became negative. The site of the lesions they point out coincided with a site of trauma as the patient in his work always leaned on this elbow.

H. S. S.

Bernard (R.). Les nodosités des saillies osseuses. [**Nodules of Bony Prominences.**]—*Bruxelles-Méd.* 1925. Dec. 13. Vol. 6. No. 7. pp. 212–215. [30 refs.]

An article on juxta-articular nodules drawing the attention of those who may not have access to the literature on tropical medicine to this well known condition, but containing nothing new.

H. S. S.

Thierfelder (M. U.). Beiträge zur Kenntnis des venerischen Granuloms. [**Notes on Venereal Granuloma.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 690-698. With 2 text figs.

This communication is based on six cases of generalized (extra-genital) tertiary granuloma venereum of which three are reported in detail.

Case No. 1 showed a liver abscess (right lobe) which had developed about six months after the primary infection which had progressed to a condition necessitating operation for phimosis: from the abscess pure cultures of "Microbacterium granulomae" were obtained. The abscess was opened and drained. Healing followed the antimony

injections so that the patient discharged himself from hospital. Three months later new granulomas were observed about the face and right submaxillary gland region in addition to a breaking down of the formerly healed and healing lesions. Eventually complete cure was obtained under specific therapy.

Case No. 2 presented granulomas on the left labium minus, on the forehead and beneath the angle of the right lower jaw, which lesions had commenced some 12 months after the primary infection. From the forehead a large sequestrum was removed. The general condition was so poor that a fatal result appeared imminent, though the patient gradually recovered under Stibenyl-Heydon injections.

Case No. 3 developed granulomas about the right ear with the largest tumour over the mastoid area, inside the aural meatus, beneath the right lower jaw and on the right side of the neck, some 6 years after the primary infection. All the tumours healed under specific antimony treatment.

The three other cases, still under treatment, showed granulomatous lesions respectively on (4) the right side of the thorax and beneath the right clavicle, (5) on the back over the right kidney region, (6) on the right index finger. A commentary emphasizes that (*a*) all these six cases had developed in association with a long persisting small primary genital lesion without any apparent secondary stage, (*b*) insufficient treatment had been administered for the primary lesion, (*c*) these tertiary granulomas did not yield so readily to specific treatment as is customary in the case of the ordinary genital tumours. Points (*a*) and (*b*) suggest either an infection of avirulent organisms or and a lowering of their virulence by insufficient treatment. The peculiar apparent preference of the lesions, in the cases here reported, for the right side of the body is noted.

W. Jenkins Oliver.

Cornwall (Leon H.) & Peck (Samuel M.). **Etiology of Granuloma Inguinale with a Clinical Report of Three Cases.** –*Arch. Dermat. & Syph.* 1925. Nov. Vol. 12. No. 5. pp. 613–628. With 13 text figs. [6 refs.]

Three cases (2 male, 1 female) are reported occurring in negroes. The histological appearance of the granuloma is compared with that of chronic varicose ulceration, the difference noted being "chiefly in degree." The cultural appearances of the organism, from smears, grown on Sabouraud's and agar media are described and figured. Intracutaneous inoculations of a culture into two rabbits gave positive results, being negative in the case of three guineapigs. "The organism isolated has a characteristic morphology in young cultures on Sabouraud's medium. This morphology disappears in old cultures, and is not reproduced in subcultures."

W. J. O.

Viswalingham (A.). **Granuloma Venereum.** - *Jl. Trop. Med. & Hyg.* 1925. Aug. 15. Vol. 28. No. 16. pp. 302–304. With 4 text figs.

Contains a brief account of the disease in Malaya and short reports of three cases. The oral administration of antimony tartrate combined with potassium iodide is recommended in association with intravenous

antimony injections. The writer employed the following prescriptions : Pot. Iod. gr. 30, Ant. Tart. gr. $\frac{1}{2}$, Aq. Chlorof. 1 oz. t.d.s. The potassium iodide in this mixture might be increased to 60 gr. and the tartar emetic to 1 gr.

W. J. O.

Alberto Cardona (C.). Granuloma Venéreo. [**Granuloma Venereum.**]—*Repert. Med. y Cirug.* 1925. Oct. Vol. 17. No. 1 (193). pp. 22–37. [5 refs.]

The author gives a fairly detailed account of Granuloma venereum and of the *Calymmato-bacterium granulomatis* and briefly describes the points of difference between this disease and various manifestations of syphilis, soft chancre, papilloma, actinomycosis and blastomycosis. He finds that the best treatment is by injections of 1 per cent. tartar emetic, starting with 5 cc. and increasing by 1–2 cc. every three days to a maximum of 12 cc. For women the initial dose is reduced and the maximum should not exceed 10 cc. He quotes six cases, five of which were syphilitic and yielded to arsenicals ; the remaining one was a mixed syphilis and venereal granuloma and a combination of tartar emetic and antisyphilitic treatment was needed.

H. Harold Scott.

Falkner (Hope). Venereal Prophylaxis. Its Meaning and Effects. [Abstract.]—*Monthly Bull. of the Eastern Bureau.* League of Nations. Health Section. 1925. Apr. 20. Year 1. No. 1. p. 22.

HEAT STROKE.

HOPKINS (Frederick S.). **Unusual Case of Heat Prostration.**—*Boston Med. & Surg. Jl.* 1925. July 30. Vol. 193. No. 5. p. 221.

Heat stroke with a body (rectal) temperature of 110° F. is unusual and recovery from such a temperature rare. The case was seen on June 6th 1925.

F. K., aged 50, a Lithuanian labourer, was found in a freight house unconscious and relaxed. Skin hot and dry and cheeks covered with vomitus. He was taken to the Springfield Hospital. Rectal temperature, 110° F. He was packed in ice, and a continuous colonic irrigation with iced water was used. Within 30 minutes the rectal temperature was 93° F. The temperature rose again in spite of cold sponge baths and reached 105° F. Ice packs and irrigation of the colon caused another sudden drop to 94·6° F. A third rise occurred at night—10·45 p.m.—when a maximum of 105° F. was followed by a drop to 97° F. Tetanic convulsions lasted through the night. During the next few days there were rises of temperature, yielding to ice packs. The patient was fairly conscious but irrational and excitable, with hallucinations. For two days he had to be strapped to his bed [these symptoms might have been checked by morphia]. His mental symptoms cleared on the seventh day, and thereafter he made an uneventful recovery. [*v.* this *Bulletin*, Vol. 20, p. 69 (ALEXANDER); Vol. 18, p. 260 (PATTISON); Vol. 16, p. 63 (HEARNE & others); Vol. 11, p. 169 (GAUSS & MEYER); Vol. 9, p. 170 (HILL).]

J. H. Tull Walsh.

UNITED STATES NAVAL MEDICAL BULLETIN. 1926. Jan. Vol. 24. No. 1. pp. 145–154.—**Heat Cramps and Heat Exhaustion on Board Ships of the Navy in Recent Months.**

Fifty-six cases of heat cramps or heat exhaustion, most of them cramp cases, were reported by the U.S.S. *Wyoming* as occurring among members of the fireroom force in the month of June (1925). "Heat cramps" and "Heat exhaustion" are the two titles provided in the United States Navy Nomenclature of Diseases to cover all cases of disability attributed to high temperatures of the air, exclusive of sunstroke. Such unusual morbidity led to a request for information as to the conditions under which these cases had occurred. The information was furnished by the senior medical officer of the *Wyoming*. A table is given (pp. 146–147) of all admissions due to heat or to heat and laborious work on all vessels of the Navy for 1924 and for 1925 up to July 6th. The characters of the duty performed by any vessel in one year may be very different from that performed in another so far as it is related to heat hazards. All factors which have a bearing on the physical condition of the personnel, at the time cases of heat exhaustion or cramps are occurring, must be taken into consideration. In the *Utah's* report it was stated that a large percentage of the men were very young and many of them had but little experience in firing when called upon for maximum work. In the case of the *Arkansas* the average physique of firemen was reported as low; the average temperature of the outside air during the trial was 75° F.; the average temperature in the engine rooms was 114° F.; in the firerooms 95° F. These two reports are exceptional. Reports from practically all other ships indicated that the men in both firerooms and engine rooms were experienced and in excellent physical condition. Signs of fatigue

were noted on the destroyer *Lamson*. She underwent a 24-hour trial, January 5th, 1925, in Cuban waters. Outside temperature 80° F., temperature in firerooms between 120° and 127° F ; in the engine rooms 110 to 114° F. The symptoms, lasting about 48 hours, reported in heat cramps, were fever, usually about 100° F., moderate tachycardia severe cramps in the abdomen and extremities, and, occasionally, vomiting. In the few heat exhaustion cases the patients were prostrated when admitted, with subnormal temperatures, cold moist skin, rapid pulse, no cramps.

J. H. T. W.

Parrino (G.). I Poteri immunitari dell' organismo nel colpo di sole e nel colpo di calore sperimentale. [**The Possibility of producing Immunity in Experimental Sun and Heat Stroke.**]—*Ann. d'Igiene.* 1925. Apr. Vol. 35. No. 4. pp. 348–366. [21 refs.]

This paper is more or less academic and not very convincing. Guineapigs exposed to high temperatures were injected with non-lethal doses of *B. typhosus* and anti-anthrax vaccine. Their resistance to heat was diminished. Some died, some survived. The controls lived. Pigeons and rabbits were somewhat similarly treated. Those interested might read the detailed experiments.

J. H. T. W.

MacNaught (W. W.). Heat-Stroke : Hyperpyrexia : Recovery. [Memoranda.]—*Brit.Med. Jl.* 1923. Dec. 1. p. 1042.

von Schroetter (Hermann). Considérations théoriques et pratiques sur le coup de chaleur.—*Rev. d'Hygiène.* 1924. Jan. Vol. 46. No. 1. pp. 38–45. [1 ref.]

TROPICAL OPHTHALMOLOGY:

A REVIEW OF RECENT ARTICLES.—V.*

THE EYELIDS.—M. AZMY EL KATTAN[1] speaks highly of an operation for *ptosis* which he learned at Moorfields Hospital. A bridge of skin, running parallel to the lid border and about five millimetres distant from it, is raised from the surface of the upper eyelid. This bridge is divided at its centre so as to form two strips, one of which is attached at the inner side of the lid and the other at the outer. Two short incisions are then made through the tissues just below the eyebrow, each of these being placed directly above the attachment of a strip. The incisions are carried right on to the orbital margin, and the skin is undermined. A narrow-bladed scalpel is passed beneath the skin of the lid so as to form tunnels running between the incisions and the corresponding strips of skin. Each skin strip is then drawn into its proper tunnel, and its tip is caused to emerge through the incision beneath the brow. The next step is to anchor the end of the strip to the occipito-frontalis muscle. This is effected by passing a suture deeply into the skin and tissues about 5 mm. above the incision. The needle is made to emerge through the incision, and is then passed twice through the end of the skin strip. It is re-entered through the incision, passed through the deep tissues, and brought out close to the point of its original entry. The suture is now tied over a rubber tube, or other guard, and the edges of the wounds are united by stitches. It is stated that no trouble due to the formation of implantation cysts has been experienced.

MACCALLAN and PÉRETZ[2] are of opinion that *trichiasis*, or the faulty direction assumed by the eyelashes as a sequel of trachoma, is due to a marked hyperaemia of the lid border rather than to a cicatricial process. Extra cilia, which grow in different directions, develop; and those which turn inwards towards the globe cause the complications associated with trichiasis. With respect to the surgical treatment of the condition, they lay down the following general principles:—(1) Except in urgent cases, in which the trichiasis is causing corneal ulceration, the associated trachoma or catarrhal conjunctivitis should be first treated; (2) the use of clamps, which obstruct access to the angles of the field of operation, should be avoided and a spatula be used to fix the lid; (3) any removal of the skin of the lid should be avoided; (4) a partial operation should never be performed, even though only a limited portion of the lid border is affected by the trichiasis; (5) the deformity should be over-corrected if cicatrization is incomplete; (6) local anaesthesia should be employed except in the case of children, and a weak solution of adrenalin should be then injected into the lid. [N.B.—Such injection should be made before the anaesthetic is administered; otherwise it might prove dangerous.] Van Millingen's operation, in which a strip of mucous membrane, taken from the lip, is grafted into a groove made on the ciliary border. Streatfeild's, in

* For the fourth of this series see Vol. 22, pp. 947–955.

1 AZMY EL KATTAN (M.). An Operation for Ptosis.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 30–36. With 6 figs.

2 MACCALLAN & PÉRETZ. Le traitement chirurgical du trichiasis et de l'entropion d'origine trachomateuse.—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 127–134. [1 ref.]

which a wedge-shaped piece of the tarsus is removed, and the combined excision of the tarsus and retrotarsal fold are the surgical measures recommended by the authors.

The Conjunctiva.—Motais[3] has noted that out of 706 blind eyes examined by him in Cochin China, 409 (57 per cent.) had been lost as result of *purulent ophthalmia*. Trachoma accounted only for 25 of the losses (4·5 per cent.). This observation rather strikingly contrasts with Ling's estimate that trachoma is responsible for 37·5 per cent. of the blindness amongst Chinese patients. In Cochin China 90 per cent. of the purulent ophthalmia is due to the gonococcus. A rise in the incidence of Koch-Weeks catarrh is observed at the beginning and the end of the hot weather. Gonorrheal ophthalmia frequently spreads through a family by contagion from eye to eye. Motais looks on protein therapy as the mainstay in the treatment of the disease, and he now employs injections of boiled milk instead of vaccines. 8 cc. is injected beneath the skin of the abdomen in the case of an adult man, 6 cc. in the case of a woman, and 4 cc. in a child. He deprecates the use of strong solutions of silver nitrate, and prefers to employ eyebaths of a mild solution applied in the reclining posture. [He does not mention the use of 10 per cent. magnesium sulphate lotion in an eyebath —a treatment the reviewer has found most valuable.]

M. C. Pfunder[4] reports a case of *Primary tularemia of the conjunctiva* in a farmer who apparently infected himself when removing some wood ticks from his horses. Two days later conjunctivitis with ulceration occurred. Very marked lymphangitis with constitutional symptoms were present, and a fortnight later the patient's serum, in a dilution of 320, was positive for tularemia. When seen forty days after the onset of the disease, the eye was still chemotic, the preauricular gland was much enlarged with areas of softening, and the lymphatic channels between the eye and the gland were greatly thickened. The rabbits upon the patient's farm in Montana appear to have been suffering from a severe epidemic disease.

Trachoma. Amongst novel forms of treatment for trachoma Collin and Schweisguth[5] report their experience of subconjunctival injection of iodine vapour. Warmed air is blown by a bellows, such as that used in a Paquelin's cautery, over the surface of iodine tincture contained in a bottle. The resulting vapour passes through a rubber tube to which is attached a fine hollow needle. The needle is inserted in the superior fornix immediately behind the upper edge of the tarsal plate, and the vapour is pumped very gently into the tissues. Treatment is repeated every three, four, or five days, according to the degree of reaction produced. The reaction is stated always to be much less than that which follows an injection of cyanide of mercury or of copper sulphate. It commences two or three hours after the injection and lasts for two or three days; but it is quite painless except during the first few minutes. Subconjunctival haemorrhages are the rule, especially in the case of long-standing trachoma. The authors claim the following advantages for the treatment:—(1) It is painless; (2)

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3 Motais.—*Ann. d'Oculistique.* 1925. Sept. Vol. 162. No. 9. pp.

4 Pfunder (Malcolm C.). Primary Tularemia of the Eye.—*Jl. Amer. Med. Assoc.* 1925. Oct. 3. Vol. 85. No. 14. p. 1061. With 2 text figs. [2 refs.]

5 Collin (L.) & Schweisguth. De l'enfumage iodé dans le traitement du trachome.—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 134–141.

the discharge ceases rapidly ; (3) it is very effective in the early stages of the disease ; (4) it is most beneficial in cases complicated by pannus and corneal ulceration.

Birks[6] states that the technique described in Nesfield's 'Ophthalmic Surgery' has afforded him much satisfaction in the treatment of trachoma. The fornix is ballooned by the injection of phenolaine solution and the membrane is well scraped by a scalpel. After stopping the bleeding, pure carbolic acid is applied with a probe to the bases of the 'granules' ; this is immediately sponged off in order to prevent it spreading, and castor oil is instilled. Birks uses a solution of 1 per cent. novocaine, 1 per cent. carbolic acid, and 4 per cent. sodium citrate with adrenalin instead of phenolaine. Subconjunctival injection of copper sulphate in solution was employed by Cuenod in the treatment of trachoma as long ago as 1903, and Urrets Zavalia [7] now recommends its use in a slightly modified manner. Two solutions are used : (*a*) Copper sulphate 1 per cent. with novocaine 4 per cent. ; (*b*) novocaine 4 per cent. with adrenalin. The following is the general scheme of treatment which may be altered slightly according to the circumstances of individual cases : The first injection consists of 0·25 cc. of solution (*a*) combined with 0·75 cc. of solution (*b*) ; the second of 0·5 cc. of each ; and the third of 0·75 cc. of (*a*) with 0·25 cc. of (*b*) ; three further injections are given of (*a*) alone—1 cc. The patient must be warned to expect pain and swelling, as these may be severe. The pain comes on about twenty minutes after the injection and lasts from three to six hours. It may be relieved by aspirin and fomentations. The swelling varies considerably in different cases and usually persists for eight or ten days, though it may disappear in three days or continue for a fortnight. The next injection is made when it subsides. An eye-lotion of 8 or 10 per cent. copper sulphate with glycerin, to which novocaine may be added, is used after the termination of the course. The method is unsuitable for acute trachoma and for cases associated with firm and extensive scarring ; but it has been found very effective in the early stages of the disease.

J. Sédan[8] in a paper discussing the remedies for trachoma employed by the doctors of ancient Rome, described a small slate tablet which was found at Villereal in 1848. The inscription on the tablet shows that the value of zinc and copper salts in the treatment of conjunctival disease was well known to them.

Motais[9] states that about 20 per cent. of the population of Saigon-Cholon are affected by trachoma. He found that the disease was just as prevalent among the five and six year old children, beginning school life, as among the older scholars of twenty. Naturally, the cicatricial form of the disease was more common in the latter and was very rarely seen in patients under ten. He recognizes a condition of 'pretrachoma' in which the angles of the fornix are lightly affected. This is easily cured by the usual caustic drugs ; and quite often a suitable correction

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6 Birks (W. H.). Treatment of Trachoma. [Correspondence.]—*China Med. Jl.* 1925. Sept. Vol. 39. No. 9. p. 851.

7 Urrets Zavalia (Alberto). Las inyecciones subconjuntivales de sulfato de cobre en el tratamiento del tracoma.—*Semana Méd.* 1925. Sept. 17. Vol. 32. No. 38. (1653.) pp. 708–718. [14 refs.]

8 Sédan (Jean). Les sels de cuivre dans la thérapeutique des oculistes romains.—*Revue du Trachome.* 1925. Oct. Vol. 2. No. 4. pp. 142–145. With 1 text fig. [2 refs.]

9 Motais (François). Trois années d'ophtalmologie en Cochinchine.—*Ann. d'Oculistique.* 1925. Oct. Vol. 162. No. 10. pp. 763–786 [1 ref.]

of the refraction with the consequent rest to the eyes is sufficient to remedy it. Even well-marked trachoma is, he thinks, capable of undergoing a spontaneous cure without any damage to sight. The fact that, though such a large proportion of the population is infected, defective vision, due to trachoma complications, is seldom seen in the ordinary street crowds, suggests that the disease may undergo a spontaneous cure. His experience is that trachoma usually runs its course slowly without doing any great harm, provided it remains free from attacks of conjunctivitis (due to secondary infections); and that it is the carrier of the Koch-Weeks bacillus and other such pathogenic organisms who suffers from the grave, destructive forms of the disease. Brossage and copper sulphate have been found to be the most generally useful forms of treatment. Subconjunctival injections of cyanide were found beneficial when corneal complications were present. He abandoned the operation of peritomy, since, after giving it a fair trial, he decided it was of no value.

J. A. Stucky[10] regards loss of elasticity of the conjunctiva as an important diagnostic sign in trachoma. In simple folliculosis "the conjunctiva is easily and evenly put on the stretch, the whole membrane being elastic, and the blood vessels visibly outlined. This is not the case in true trachoma." He uses grattage in the local treatment of the disease, and attaches great importance to constitutional treatment, special attention being paid to a properly balanced diet. He speaks very favourably of protein therapy.

S. Lewis Ziegler[11], in a paper upon the surgery of trachoma, stresses the importance of blepharophimosis and of lachrymal obstruction as factors in preventing the cure of the disease. Blepharophimosis causes harmful pressure on the cornea and thus leads to pannus and ulceration. Canthotomy, or division of the upper limb of the external tarsal ligament, is recommended. Excess of moisture, associated with obstruction of the lachrymal passages, renders the conjunctiva water-soaked, and may thus help to maintain the swollen and unhealthy condition of the membrane. The author summarizes his paper as follows:—

1. The complications of trachoma are persistently maintained by two mechanical processes: (i) lid friction, from blepharophimosis and trichiasis, and (ii) lachrymal maceration, from perversion of the tears and obstruction of the duct by trachomatous invasion.

2. The practical problems involved are (i) to preserve normal tissue by conservative surgery, or, if this fails, (ii) to resort to radical surgery.

3. The conservative surgery of trachoma calls for (*a*) canthotomy and (*b*) rapid dilation of the duct, combined with (*c*) galvanocautery puncture, (*d*) Knapp's roller operation and (*e*) freezing by carbon dioxide snow; while (*f*) galvanocautery peritomy may be used to relieve pannus.

4. The radical surgery of trachoma requires in addition (*g*) Burow's splitting of the cartilage, or (*h*) Kuhnt-Heisrath's tarsal excision.

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10 Stucky (J. A.). Trachoma: Suggestions as to Diagnosis, Etiology and Treatment.—*Southern Med. Jl.* 1926. Feb. Vol. 19. No. 2. pp. 140–142.

11 Ziegler (S. Lewis). The Surgery of Trachoma. Practical Problems.—*Jl. Amer. Med. Assoc.* 1926. Feb. 6. Vol. 86. No. 6. pp. 399–404. With 15 text figs. [13 refs.]

F. Oldt[12] says that "before passing judgment on the reports of results of any form of treatment for trachoma, the accuracy of diagnosis should be carefully considered. Especially is this true in China, where reports are heard of the exceedingly great prevalence of the disease. The question arises whether these reports are not exaggerated and whether cases of granular conjunctivitis [? folliculosis] are not included". One of the important signs characteristic of trachoma is that the conjunctival vessels are rendered invisible by the granulations, whereas, in the more superficial and less destructive forms of chronic conjunctivitis, they can be traced throughout their whole course. It is suggested that all cases should be treated as simple conjunctivitis for about four weeks, and, with the exception of acute inflammations and vernal catarrh, they should then be operated upon if still granulomatous.

L. Webster Fox[13] laments the irresponsibility of the North American Indians, and their carelessness as regards trachoma, which disease is very prevalent amongst them. The Indians will not tolerate any protracted treatment, and Fox has found grattage to be the most satisfactory operation. Tarsal resection is performed in the cicatricial stages.

C. F. Heal[14], when in Bagdad, treated many trachomatous Arabs, and states that he found a modification of Heisrath's excision most satisfactory in the treatment of cicatricial trachoma with trichiasis. After excising the tarsus, he attaches the fringe of transitional conjunctiva to the lid by three mattress sutures. These are made to enter and to emerge through the skin about 2–3 mm. from the lid margin, so that, when tied, they tend to evert the edge of the lid and thus to correct the entropion and trichiasis.

The *Revue de Trachome* for January 1926 contains a report of the meeting of the Anti-trachoma League on January 16th 1926. V. Morax[15] showed some cases of a papillary form of chronic conjunctival inflammation in which the aetiology was obscure. Trachoma, tubercle, and syphilis were excluded as causes. He remarked how easily similar conditions might be confused with trachoma. Aubaret[16] stated that analogous cases were met with in districts where trachoma was rife, and he suggested that many distinct diseases may be included in the term "trachoma". C. Abadie[17] reported a case of ophthalmia neonatorum which he had successfully treated by Blaizot's serum, and he thought this serum might prove useful as a prophylactic against epidemics of ophthalmia. V. Morax[18] discussed the rôle of acute conjunctivitis in the aetiology of trachoma. He concluded that

12 Oldt (F.). Differential Diagnosis of Trachoma.—*China Med. Jl.* 1926. Jan. Vol. 40. No. 1. pp. 68–69.

13 Fox (L. Webster). The Trachoma Problem among the North American Indians.—*Jl. Amer. Med. Assoc.* 1926. Feb. 6. Vol. 86. No. 6. pp. 404–406. [1 ref.]

14 Heal (G. Freeman). Excision of the Superior Tarsus and Conjunctiva in the Treatment of Trachoma.—*Brit. Jl. Ophth.* 1926. Apr. Vol. 10. No. 4. pp. 185–191. With 4 text figs.

15 Morax (V.). Sur un type de conjonctivite papillaire chronique.—*Revue du Trachome.* 1926. Jan. Vol. 3. No. 1. pp. 1–5.

16 Aubaret: Discussion of Morax.—*Ibid.* p. 5.

17 Abadie (Ch.). Quelques suggestions concernant la prophylaxie et le traitement des conjonctivites gonococciques et du trachome.—*Revue du Trachome.* 1926. Jan. Vol. 3. No. 1. pp. 8–12. [1 ref.]

18 Morax (V.). Le role des affections conjunctivales aigues dans l'étiologie du trachome.—*Revue du Trachome.* 1926. Jan. Vol. 3. No. 1. pp. 12–16.

trachoma might develop quite independently of any previous attack of acute conjunctival inflammation ; but that such attacks served to draw attention to the existence of the chronic disease. A. GAUTHIER[19] in 1922 observed an epidemic of mild conjunctivitis amongst the children of Greek refugees from Turkey. They were noticed to be remarkably free from trachoma at the time. Some months later, however, he had occasion to examine them again, and then found a considerable proportion affected by trachoma. He formed the opinion that the insanitary condition of the camps, in which there was overcrowding and an abundance of flies, reacted on a lowered conjunctival resistance, caused by the previous epidemic, and thus favoured the spread of trachoma. To insist upon the contagious nature of trachoma might appear to many like flogging a dead horse. To convince the sceptical, however, J. SÉDAN[20] reported a case in which a healthy husband was infected by his trachomatous bride. It may be remarked that the patient had suffered from an attack of diplobacillary conjunctivitis a few months before he contracted trachoma.

CORNEA.—S. K. MUKERJEE[21] records two cases of that most distressing complaint, *Herpes ophthalmicus*, in male patients, aged respectively 76 and 66. The elder of the two had suffered from influenza two months previous to the onset of the disease. The eye was lost through corneal ulceration ; and a persistent neuralgia proved very troublesome. The younger had suffered from severe herpes of the right side a fortnight before the supra-orbital eruption appeared. Superficial infiltration of the cornea occurred with slight iritis and keratic precipitates. The cornea cleared completely, but here, too, anaesthesia in the affected area with neuralgia remained. The nasal nerve was affected in both cases. In the experience of the reviewer phosphide of zinc occasionally seemed of some use in this disease. One-tenth of a grain may be given in a pill every hour for five hours, and every three hours subsequently. C. A. YOUNG[22] has reported 25 cases of various types of corneal ulceration which he treated with the SHAHAN electrothermophore. He considers that the thermophore is almost a specific in the treatment of so-called infected corneal ulcers. The instrument is applied for one minute at a temperature between 158° and 160° F. When used at lower temperatures (120° to 140° F.) it is stated to hasten regression and stimulate absorption.

OCULAR MUSCLES.—*Squint.* HENRY SMITH[23] pleads for the treatment of concomitant squint by faradization of the faulty muscle rather than by operation. He points out that shortening soon takes place in a relaxed muscle, and that such contraction occurs more quickly if the muscle is submitted to electrical stimulation. After cocainization of the conjunctiva, the faulty rectus is subjected to a weak faradic current for five minutes, and this treatment is repeated twice daily. SMITH points out that this measure involves no harmful disturbance of the axes of the globe.

19 GAUTHIER (A.) : Discussion of Morax.—*Ibid.* pp. 17–19.

20 SÉDAN (Jean). Contamination trachomateuse chez l'adulte à l'occasion d'une conjonctivite à diplobacilles de Morax.—*Revue du Trachome.* 1926. Jan. Vol. 3. No. 1. pp. 20–24.

21 MUKHERJEE (S. K.). Two Cases of Herpes Zoster Ophthalmicus.—*Calcutta Med. Jl.* 1925. Oct. Vol. 20. No. 4. pp. 153–154.

22 YOUNG (Charles A.). Electrothermophore in Treatment of Corneal Ulcers.—*Amer. Jl. Ophth.* 1925. Apr. Vol. 8. Ser. 3. No. 4. pp. 293–300. [15 refs.]

23 SMITH (Henry). A Plea for Research in the Treatment of Squint.—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. p. 559.

Lens.—*Cataract.* M. Tewfik[24] has recorded his favourable impression of the induction of orbicular paresis in the operation of cataract extraction. He encircles the orbit with deep injections of a half per cent. solution of cocaine hydrochloride. The injections are placed half to one inch away from the bony margin of the cavity; and the total amount of the fluid injected varies from 2 to 4 cc. Using this weak solution of cocaine he has hitherto had no trouble from poisoning.

Retina.—A case of *Retinitis Pigmentosa* affecting only one eye has been reported from the Dutch East Indies by C. Bakker[25]. So far, according to the author, only six well-authenticated cases of monocular retinitis pigmentosa have been recorded. He adds another which occurred in a Eurasian woman 56 years of age, whose left eye had been defective for two years without an apparent cause, and showed the typical characteristics of retinitis pigmentosa.

Glaucoma. Even to-day one may encounter the erroneous impression that glaucoma does not attack myopic eyes. A paper by Knapp[26] may serve a useful purpose in helping to correct this, as he analyses 32 cases of the disease he has seen in myopic eyes. He considers that "glaucoma in myopic eyes is of the simplex type, with deep anterior chamber, low increased tension, characteristically shallow cup, and the usual glaucomatous field defects." The operative results are good.

General Systemic Diseases.—*Malaria.* R. E. McConnell and C. M. McGill[27] describe a case of *herpetic ulcer of the cornea* associated with malaria. This is, of course, one of the most common ocular complications of malaria; but the authors consider that it must be relatively rare in the Colombian State of South America since they had not met with it previously.

M. Riad[28] has recorded a case of *amblyopia from quinine poisoning.* The patient, a man of good physique aged 30, was given a large dose of quinine in mistake for Epsom salts. Vomiting was followed by an attack of coma which lasted for eight hours. On coming round the patient found that he was blind and deaf. The deafness gradually passed off; and, when seen some two months after the accident, the central vision was 6/60 in one eye and 6/24 in the other. The upper, lower, and nasal fields were greatly contracted. Both discs were pale with slightly hazy edges, and the macula was a brownish red colour. The retinal vessels were much contracted with white lines visible along the arterial walls, whilst two white plaques were present on the superior nasal artery of the right eye at a short distance from the papilla. Central vision improved greatly for about two months under treatment with nitrite of amyl, strychnine, etc.; but, as so often happens in these cases, a marked

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24 Tewfik (M.). Akinesis in Cataract Extraction.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 25–28. [5 refs.]

25 Bakker (C.). Een geval eenzijdige Retinitis pigmentosa.—*Geneesk. Tijdschr. v. Nederl.-Indie.* 1925. Vol. 65. No. 5. pp. 593–594.

26 Knapp (Arnold). Glaucoma in Myopic Eyes.—*Arch. of Ophth.* 1926. Jan. Vol. 55. No. 1. pp. 35–37.

27 McConnell (R. E.) & McGill (C. M.) A Note on Corneal Ulcer in Malaria. —*Jl. Trop. Med. & Hyg.* 1926. Jan. 1. Vol. 29. No. 1. pp. 3–4.

28 Riad (M.). Description of a Case of Quinine Amblyopia.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 53–55.

deterioration set in subsequently. Another case of *quinine amaurosis* has been published by F. C. Plummer[29], in which, about three or four weeks previous to the examination, the patient when going to bed took thirty grains of quinine sulphate in tablet form. He woke up blind and deaf on the following morning. Five days later the hearing improved and perception of light returned. When seen, the vision in each eye was 6/36; the pupils were rather dilated and sluggish in reaction. There was a central scotoma for green and red, and the visual fields were contracted to the 10° line. The optic discs were intensely white, and the retinal arteries markedly contracted. A week later the R.V. was 6–12 and L.V. 6–9, while the scotoma had disappeared but the visual fields were unchanged. When seen a year later the condition was the same. Remarkable features are (1) the dose was comparatively small, and (2) the patient had been accustomed to take prophylactic doses of 5 grains of the drug for many years without injury.

Tuberculosis. T. M. Li[30] met with a case of extensive tuberculosis in the eye of an infant aged ten months. The baby had suffered from cough and dyspnoea for two months, and the parents had noticed an inflammation of the right eye for one month. All the ocular tunics were involved and the eye was disorganized. Typical giant-cell systems containing acid-fast bacilli were found on microscopical examination. The infant died a few days after the eye had been removed. The mother suffered from advanced tuberculosis. Li considers the case to be remarkable (1) on account of the youth of the patient, and (2) because such an extensive involvement of the ocular tissues occurred within so short a period. He thinks it is probable that many cases of ocular tuberculosis in moribund tubercular patients escape observation.

T. P. Lee [31] reports that he found miliary tubercles in the choroid of a Russian male, age 45, upon whose body he was making an autopsy. The cause of death was carcinoma of the lungs associated with general miliary tuberculosis, and the discovery of the ocular lesion was quite unexpected. Five tubercles, the largest being about 0·75 mm. in diameter, were found to be situated round about the macular region in each eye. The tubercles appeared to originate as small lymphocytic infiltrations around the veins of the middle-sized vessel layer of the tunic. No giant-cells were observed, but acid-fast bacilli were present in abundance. In no case had the tubercles penetrated the membrane of Bruch. No fundus abnormality had been detected in the course of an ophthalmoscopic examination made a week before the patient died.

Kala-Azar. W. P. Ling[32] observed retinal haemorrhages in two out of the five kala azar patients whose fundi he examined. He considers that the haemorrhages may be attributed to the intense secondary anaemia which these two patients showed. From his

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29 Plummer (F. C.). Quinine Amaurosis. [Memoranda.]—*Brit. Med. Jl.* 1925. Dec. 5. p. 1062.

30 Li (T. M.). Extensive Tuberculosis of an Eye in an Infant.—*China Med. Jl.* 1925. Nov. Vol. 39. No. 11. p. 1002–1011. With 4 figs. [12 refs.]

31 Lee (T. P.). The Finding of Miliary Tubercles in the Choroid of Autopsy Specimens.—*China Med. Jl.* 1925. June. Vol. 39. No. 6. pp. 501–503.

32 Ling (W. P.). Further Observations on the Fundus Oculi of Kala-Azar Patients.—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 681–683. [2 refs.]

observations he thinks that absorption of the blood is likely to occur in from four to five months, once the general disease has been efficiently treated.

N. Bhaduri[33] has observed the same complication in kala azar, and noted its direct association with the anaemia connected with the disease. Rapid absorption of the blood occurred in his cases when the constitutional condition improved.

Diabetes.—W. R. Parker[34] has drawn attention to the great variety of ocular manifestations presented by diabetics. He instances the following conditions :—Glycosuric amblyopia with a central colour scotoma, changes in refraction, occasional paralysis of accommodation, paralysis of ocular muscles, xanthelasma, iritis (to which eyes of a diabetic subjected to an intraocular operations are specially liable), cataract, retinitis, neuritis, and lipaemic retinitis. He mentions a case of glaucoma in which both eyes were affected ; this failed to respond to iridectomy or to sclero-corneal trephining, but, a great excess of blood sugar having been found, eventually yielded to injections of insulin.

Parasitic Disease.—*Ocular Myiasis.* W. B. Herms[35] identified two specimens, sent to him by Faus from Honolulu, as larvae of *Cephalomyia* (*Oestrus*) *ovis*—the common head-maggot fly of sheep. Each specimen was about one millimetre in length. The larvae had been removed from the eye of a labourer in a chemical concern. Two days before he was seen, some dust from a keg of chemical compound was blown accidentally into the left eye of the patient, and conjunctival irritation followed immediately. The larvae were buried in the sclera. They were extremely adherent to the conjunctiva, and caused an acute inflammation of the membrane with ulceration. Herms states that the adult female fly is slightly more than half the size of a honey bee. It is yellowish brown in colour and deposits living young. Deposition of the young is accomplished while on the wing by striking the nostril of the victim, or by dashing into the eye. The larvae are very spiny and quite active. They possess a pair of relatively large hooklets at the anterior end of the body. Migration occurs into the nasal sinuses.

Miscellaneous.—M. Tewfik[36] has used potassium sulphate to enhance the anaesthetic action of cocaine, and he has found that a 1 per cent. solution of cocaine induces a satisfactory surface anaesthesia if ½ per cent. of potassium sulphate is added. The actual percentages of the drugs used were : Cocaine hydrochlor. 1 per cent. ; adrenalin chlor. 1–1,000, 5 per cent. : 2 per cent. solution of potassium sulphate 25 per cent. ; carbolic acid solution 69 per cent. He refers to similar favourable reports of the preparation by other surgeons.

The Annual Medical and Sanitary Report for the Uganda Protectorate for the year 1924 includes a report on the Eye Clinic at Mulago

33 Bhaduri (B. N.). Retinal Haemorrhage in Kala-Azar.—*Calcutta Med. Jl.* 1925. Nov. Vol. 20. No. 5. pp. 187–192. [4 refs.]

34 Parker (Walter R.). Ocular Manifestations of Diabetes.—*Amer. Jl. Ophth.* 1925. Apr. Vol. 8. Ser. 3. No. 4. pp. 284–287. [3 refs.]

35 Herms (W. B.). Ophthalmomyiasis in Man due to *Cephalomyia* (*Oestrus*) *ovis* (Linn.).—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 54–56. With 1 text fig. [4 refs.]

36 Tewfik (Mohammed). Some Clinical Experience with Cocaine and Potassium Sulphate Solution and with Butyn.—*Bull. Ophth. Soc. Egypt.* 1925. pp. 44–47. [4 refs.]

by Dr. H. B. Owen[37]. At present this clinic is only a small one with 619 new cases and 2,053 total attendances. Owen states that trachoma is far the most common disease ; and it accounted for over one-third of the admissions. This is interesting as some writers have stated that trachoma seldom attacks negroes. Interstitial keratitis is rarely seen ; and yet general syphilis is quite common amongst the population. Senile cataract seems to be rare, only five cases being noted (0·8 per cent. of the new admissions). Owen suggests that this apparent rarity may be due to the fact that a lack of transport facilities prevents senile patients coming to hospital. [One notes that for the whole Protectorate, out of a total of 257,677 patients treated for all causes, only 38 suffered from cataract. Of the same total only one is returned as suffering from vesical calculus. Henry Smith has remarked that the converse obtains in the Punjab, viz., those districts which show the highest incidence of senile cataract show a correspondingly high rate of stone.] Optic atrophy is stated to be rare, only one case of primary atrophy and two of secondary atrophy being seen. Owen believes parasyphilitic conditions to be almost unknown in the country. The majority of operations were on account of entropion—the result of trachoma.*

H. Kirkpatrick.

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37 Owen (H. B.). Report on the Eye Clinic for 1924. *Uganda Ann. Med. & San. Rep. for Year ended 31st Dec. 1924.* pp. 66–67.

* The summary of Dr. Owen's report was sent to Dr. Howard Cook, since it was thought that from his large experience he could make useful comment on the questions raised. Dr. Cook states that he found trachoma very prevalent in the Mengo district, but that other forms of conjunctivitis, with their consequent corneal complications, were also common there. He, too, has noticed the comparative rarity of cataract, and remarks that there may be some connexion between this and the correspondingly low incidence of glaucoma which exists. He met with several cases of optic atrophy, but considers that locomotor ataxy is extremely rare in Uganda.

MISCELLANEOUS.

Balfour (Andrew). **Some British and American Pioneers in Tropical Medicine and Hygiene.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 189–229. With 54 portraits on 6 plates. [9 refs.]

At a time when people seem more bent on claiming rewards for themselves than on thinking of what they owe to their predecessors, it is refreshing to find an author who, looking with some reverence into the Past, assists us to the salutary remembrance that there were good men anterior to Agamemnon, and thence to the chastening reflection that it is sometimes more profitable to remember our deficiencies than to glorify our achievements.

In the present paper we learn that there were great men before Napoleon who understood that an insanitary environment is more disastrous to the fighting-man than the bloodiest engagement; such were John Pringle (1707–1783), James Lind (1716–1794), Gilbert Blane (1749–1834), and Thomas Trotter (1760–1832)—the first a great benefactor to the Army, and the others equal benefactors to the Navy; and that there were good men who produced good books on the diseases of the tropics before the encyclopaedists of the present day. The four above-named, along with George Ballingall (1780–1825) and George Playfair, both of the I.M.S., the former distinguished for discriminating between two forms of dysentery, and the latter for advocating ipecacuanha in the treatment of that disease, are but six of the 29 pioneers—most of them shown in his habit as he lived—who are here brought to revisit us from the registers of the 18th century.

The author also calls up—and also, in most cases, with their portraits—42 pioneers who led the way, through gradually improving conditions, during the 19th century; the name and fame of most of these are still fresh in memory and some of them—Jenner, Parkes, Florence Nightingale, Livingstone, Snow, Manson, Gorgas—are as familiar as household words. He does not profess completeness, but there are two outstanding names that one misses from his record, namely, F. J. Mouat (1816–1897) and H. J. Carter (*ob.* 1895), both of the I.M.S.; The former in 1853 carefully tested chaulmoogra in the treatment of leprosy and strictly recommended it to the notice of the profession; the latter in and about 1856 published a series of remarkable researches on Protozoa—particularly on their sexual phenomena—which were far in advance of the knowledge then current.

A paper like this does something more than impart instruction. It admonishes us of one of the serious deficiencies of the ordinary medical curriculum, namely, neglect of the History of Medicine. Without a good knowledge of this history of hard work and self-sacrifice under difficulties how shall the old spirit remain alive and the ancient traditions of our profession be handed on unbroken?

A. Alcock.

Oppenheim (F.). **Review of One Hundred Autopsies of Shanghai Chinese.**—*China Med. Jl.* 1925. Nov. & Dec. Vol. 39. Nos. 11 & 12. pp. 1011–1026; 1067–1076.

This is a more important paper than appears from the title. Its significance is due to the facts that autopsies are rarely performed in China, and that the records are here presented in full detail. The author has excluded autopsies on foreigners, those performed after 36 hours (medico-legal), deaths due to accident, violence or poison, and new-born children and some syphilitics. The age in decennia and the sex are shown in a table, where one notes that 9 were under one year; 76 were males and 24 females.

Passing over congenital defects and malformations and tumours we come to *infectious diseases*. Evidence of *typhoid fever* was found in 4 cases, and of general septicaemia in 12; in most cases streptococci or staphylococci were cultivated from blood, spleen or bone marrow. *Tuberculous* changes were found in 66 and in 65 the lungs were affected; in 16 cases tuberculosis was the cause of death. The acute miliary form was never found. Of the bodies without evidence of tuberculosis 18 exhibited pleural adhesions, and the author puts the index of primary tuberculosis at 90 per cent. In most cases the disease stops here; in 38 per cent. a secondary or tertiary tuberculosis had developed. The findings of tuberculosis in other parts of the body are detailed. Evidence of constitutional *syphilis* of adults was found 17 times, and of congenital syphilis 5 times. The aorta was affected in 16 cases, and in 8 the left ventricle was hypertrophied.

Clonorchis sinensis was found 7 times; the worms inhabited the bile-ducts, never the gall-bladder. Some specimens contained much pigment; some none. Evidence of *schistosomiasis japonica* was found 11 times. In five it was the principal disease, and in 4 others a serious malady. The intestinal canal was 8 times affected—the lower ileum and large intestine. The liver was affected in 11, and was either large, normal or small according to age; the average age of the group with reduced livers was 39. In one hobnail liver the condition could not be distinguished from ordinary atrophic cirrhosis. Eggs of *S. japonicum* were present, often in enormous quantities. Splenic enlargement occurred in 6 out of the 11. In two cases examination of the lungs revealed large numbers of eggs. *Ascaris lumbricoides* was found in 40 cases; among the medico-legal autopsies 55 per cent. were infested. Hookworms were encountered 14 times, among the forensic cases in 24 per cent. *A. duodenale* was more common than *N. Americanus*. *Trichocephalus dispar* was found 25 times and *O. vermicularis* twice. Cestodes were not met with.

Though 32 of the deceased persons were over 40 and 12 more than 50, *atherosclerosis* was rare, which is in keeping with the fact that the blood pressure of the Chinese is lower than that of Europeans; atherosclerosis was pronounced in one case only.

The *spleen* was generally enlarged. A table gives grouped weights in 84 Chinese adults. If 200 gm. be taken as the maximum weight of a normal Chinese spleen (the author would put it at not more than 150 gm.), 50 per cent. showed pathological enlargement. The enlargement is often due to hepatitis and hepatic cirrhosis, which was found in 19 cases; other cases were attributable to typhoid, septicaemia, dysentery, pneumonia, malaria and chronic septic conditions. In two instances splenic rupture had occurred. Inflammatory

disease of the *intestinal canal* was very frequent, seen in 51 cases. Changes due to "ulcerative caecitis and colitis (dysentery)" were found 7 times; in 3 the lowest part of the ileum was also affected. Typhoid ulcers numbered 4, tuberculous ulcers 17, inflammation due to schistosomiasis 8, to ancylostomes 4. Nine of the unaffected had scars in large intestine or ileum. Inflammatory diseases of the *liver* were also frequently found. Fully developed cirrhosis was found in 14, 5 due to schistosomiasis; and interstitial hepatitis 21 times, due in 5 instances to Schistosoma eggs. Four cases of gummata, 12 of tuberculosis, and 2 of typhoid pseudo-tubercles made a total of 53 persons with inflammatory changes in this viscus. Ulcers of the *stomach* were found in 11 cases, a high incidence attributed to the frequent occurrence of intestinal and hepatic disorders. The summary is of general interest :—

"As pointed out at the beginning of this article a hundred autopsies are not sufficient to allow of sweeping conclusions. Very many diseases occurring in Shanghai were of course not represented in the series. On the other hand, if the findings actually secured and proved by anatomical evidence are considered as a whole, and compared with European autopsy material, the impression is given that the diseases of China are more primitive in character than those of the West. Infectious diseases are much more prevalent, and among them the most primitive group, that caused by animal parasites especially helminths, plays an important rôle. Chronic septic conditions are very common and seem often to originate from the intestinal canal. Hertwig once said that the intestinal canal is, properly speaking, not a part of the system but a part of the external world incorporated into it. The correctness of this view is strikingly demonstrated by a comparison of the pathology of the intestine in Chinese with the pathology of peoples of the West. Splenic enlargement is very common. Tuberculosis is just as prevalent in China, or even more so than in the West, but seems to show less tendency to heal once the secondary stage is reached. Syphilis is very widespread. In Germany the writer used to see fewer cases of grave gummatous visceral syphilis in a thousand autopsies than in China amongst a hundred, a fact probably due to the lack of proper treatment in Shanghai as well as to the higher infective index. In other respects also the diseases of China can be regarded as of a more primitive nature than in the West. It appears that the organs connected with the beginning of metabolism in the intestine, liver, and stomach are more often affected, and those at the end of metabolism blood vessels, kidneys and nervous system—less often affected than in the West. On the other hand, natural selection with survival of the fittest has freer sway than in the Occident, and there are fewer factors causing contre-selection. There is still a great field for the study of comparative ethnical pathology, but for this purpose many more autopsies will be necessary and at present these are very difficult to obtain. When circumstances are more favourable a great many problems will probably be solved which now are only in the process of formation."

A. G. B.

Fischer (Walther). Der Einfluss der Rasse in der Pathologie. [**The Influence of Race in Pathology.** - *Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 88–99. [9 refs.] Also 1926. Vol. 30. No. 1. pp. 204–205.

The author limits himself to the yellow race, of which he has experience, and he considers that the study of racial differences in incidence and behaviour of disease is calculated to throw more light on

aetiology in certain cases than other studies. After some remarks on the lack of information about pelvic measurements in Chinese and Japanese, about Mongolian spots in crosses between the white and yellow races, and psychoses of the Chinese, he comes to the blood. The leucocyte formula in the Chinese differs from the European formula in that the number of lymphocytes is greater; is this due to the vegetarian diet? A study of blood groups separates the north from the south Chinese, the former being grouped with the Koreans, Manchurians and Hindus, the latter with the Japanese and Hungarians (OTTENBERG); more observations are required.

Most observers are agreed that appendicitis is rare in the Chinese, but this may be attributed to such cases not coming within the ken of the European doctor; PFISTER at Peking has recently recorded 136 appendicitis operations among 3,000 admissions for all diseases; however, one-fifth of these admissions were not of Chinese race. The author thinks that appendicitis is really scarce, and suggests that the matter might be settled by a search for partly obliterated appendices, which indicate past appendicitis. The possible causes of the low incidence—if it be such—are discussed. Ulcer of the stomach and duodenum are rare in the Chinese. Is this the result of diet? Do Europeanized Chinese get these affections? From his own observations the author believes that the values for free HCl and for total acidity of the stomach are very low. This possible factor should be the subject of study, which should include a histological examination of the stomach. Similarly stomach cancer is rarer in the Chinese than in Europe. Of oesophageal cancer he has recently written [see this *Bulletin*, Vol. 22, p. 628].

Why is sprue so common in the East in Europeans, so rare in natives? Is this racial or are there other causes? Why are typhoid and paratyphoid common in Europeans living in good sanitary conditions in China and rare in Chinese? Do the children gradually become immunized? What is the real incidence of these diseases among the Chinese? Then syphilis. Severe manifestations in skin and mucous membrane are common in the Chinese and grave gummatous ulceration of the skull such as is familiar in old museum specimens in Europe. Tabes and G.P. are believed to be rare in China. The author, in crowded Shanghai, did not see a man with tabetic gait in six years. But now PFISTER, a pupil of ERBS, reports from Peking that tabes and G.P. are as common as in Europe, and especially in soldiers. Is this the result of European treatment? We know practically nothing about arterial atheroma, blood-pressure, contracted kidney, in China, or about malformations. In his discussion of cancer which follows, there is nothing new.

The conclusion is that when we meet with racial differences we must consider their origin carefully before we attribute them to inner constitution.

A. G. B.

GIBSON (R. M.). **The Incidence of Appendicitis in Chinese.**—*China Med. Jl.* 1926. Jan. Vol. 40. No. 1. pp. 43–51.

The data were obtained from the examination of bodies at the Victoria Public Mortuary and from the records of cases treated in

hospitals at Hong Kong. Of 815 bodies examined 81 showed evidence of recent or old inflammation of the appendix and 8 had a tuberculous appendicitis. A table shows that in 60 there were adhesions and in 11 acute appendicitis [among the numerous headings obliteration of the appendix does not figure]. The incidence of appendicitis was 17·3 per cent. in persons above 5 years and 7·4 per cent. below that age.

The hospital records revealed 93 cases admitted between 1896 and 1924; of 73 persons who submitted to operation 46 recovered and 27 died; the classification of the lesions show that they were severe. Cases are cited in which over-indulgence in shrimps and crabs precipitated the attack. The conclusions are drawn that the milder types of appendicitis are common amongst the Chinese, but are not seen in hospital, and that of the relatively few suppurative or gangrenous cases most, in the larger cities, are brought to hospital.

Dr. MAXWELL expressed the opinion that Hong Kong statistics are not applicable to China proper. Conditions of life and diet differ greatly between inland China and Hong Kong. He gives some statistics and thinks that it is impossible to maintain that appendicitis is a common disease in China generally. [See also FISCHER & OPPENHEIM above.]

A. G. B.

KÜLZ (L.). Krankheitsbilder, die dem reinrassigen Naturmenschen fehlen, und die Nutzanwendung daraus für den Kulturmenschen. [**Disease Pictures not found in Primitive Man of Pure Race and the Practical Application to Modern Man.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 461–475.

The author lays stress on the purity of race of the primitive man of his title. As long as there is no admixture of races certain diseases common among civilized man are, he says, never seen. Such are diphtheria and sepsis (blood poisoning); in his experience of tropical Africa and the South Sea (period not stated) he has never seen a case of either of these: progressive and general sepsis does not occur, and he suggests that all such infections are either localized or warded off altogether. Appendicitis, rickets and diabetes are likewise absent. Nervous and mental diseases are rare, including general paralysis, the absence of which may be due to the antagonism of malaria. Benign tumours are common enough but sarcoma and carcinoma never occur in his primitive man. Here again he postulates a possible influence of malaria and notes that in the malaria-free Caroline Islands malignant disease is found, but he hastens to add that this island was colonized away back by another race, and the island folk are now not "pure". He compares groups of children in Cameroon and New Guinea with a similar group in Germany and notes that the tropical children, though free from rickets, short sight, narrow chests, scrofula and faulty "bite", are affected in high proportion with yaws, big spleen, hookworm and other gut parasites, leg sores and skin diseases. Finally he gives an interesting account of native customs which have or had a hygienic aspect, infanticide, totemism and the like.

A. G. B.

Durand (P.). Notes sur le Sahara. De Tunis au Dahomey par le Tchad. **Notes on the Sahara. From Tunis to Dahomey via Lake Chad.**]—*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4. pp. 469–504. With 7 figs. & 1 map in text.

An account of an expedition of some 1,500 miles across the desert in caterpillar cars (autochenilles), which the author accompanied as doctor. Since the distance was covered between January 7th and February 23rd little medical information can be expected. The chief result was the discovery of bilharziasis at Djanet, an oasis about half way, just north of 20° N, where repairs necessitated a longer stay than elsewhere. A feature of the expedition was the low night temperatures, which contrasting with the daily heat were very trying; the lowest recorded was -10° C. To these alternations of temperature are attributed the indolent sores of the feet from which the bare-footed "méharistes" suffer. The members of the mission suffered from fissures under the nostrils, at the angles of the lips, and at the backs of the finger joints; these fissures were painful and opened at the slightest movement, and in spite of treatment persisted till the tropic was reached. On the other hand it was noted that all serious injuries heal well in the desert. At Fort Polignac a negress was poisoned by a single flower of a species of Hyoscyamus or henbane which grows freely in that neighbourhood; the author hopes to get a supply for pharmacological investigation.

Djanet is the most southerly oasis in Algerian territory and has a thousand inhabitants. Here the commonest affections were eye injuries and trachoma with its sequelae. Absence of tuberculosis is due to lack of intercourse with Europeans. Malaria is present and venereal diseases are common. Investigation of a case of haematuria in a European led to the discovery that seven of the eight there resident had vesical bilharziasis. All were accustomed to bathe in a pool dug for the purpose in an agreeable site shaded by palm trees. Numbers of Bullinus were here found, as well as in other pools scattered over the oasis. The disease is very common among the indigenous population, who confound it with gonorrhoea and hold it of small account.

At a village near Lake Chad the author notes "Pas de tuberculose, sauf chez un jeune enfant dont le teint pâle nous frappe. Il s'agit du fils d'un officier et d'une femme Kanembou, le pére lui a laissé comme seul héritage le bacille de Koch." At N'Guigmi on the Lake syphilis is very common, with severe skin and bone manifestations which yield readily to treatment. Tuberculosis in its pulmonary or osteo-articular forms is found rarely. The epidemic of relapsing fever which has spread over Nigeria reached N'Guigmi 2–3 years ago. Owing to the absence of laboratory equipment the spirochaetes were not demonstrated here till the author's visit. The mortality is given as 10–25 per cent. The mode of transmission is discussed and is regarded as unsettled. Specimens of *Ornithodorus moubata* were brought alive back to Tunis but refused to feed.

From Chad the Mission went down to the coast through Dahomey to return by sea, and the only further information of medical interest is that chiggers so swarm at Kotonou and the Dahomey coast generally that even though the bare foot is never put to the ground one is not protected from attack. Naturally there is much of general interest in Dr. Durand's paper which does not find a place here.

A. G. B.

Akashi (M.). **Some Clinical Observations.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. Formosa).* 1925. Nov. No. 248. English summary p. 5. [In Japanese.]

Since 1923 the author at the Tainan hospital, Formosa, has had under his care 302 patients admitted for causes other than liver disease; 22·8 per cent. of these had enlarged liver and 20·8 per cent. enlarged spleen; about half the cases had both. This enlargement is attributed by the author to malaria and typhoid.

In the last five years there have been 75 admissions for acute liver inflammation, chiefly healthy subjects of both sexes between 20 and 40 years. Under injections of emetine 68 recovered and *E. histolytica* is recognized as the cause; in 7 pus formed.

A. G. B.

Mendelson (Ralph W.). **Some Interesting Diseases observed in the Clinic of the Bangkok Central Hospital.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 16. Vol. 28. No. 22. pp. 393–405. With 49 text figs.

This paper consists of a short introduction and a gallery of good photographs of patients presenting themselves for treatment in the Clinic of the Central Hospital, Bangkok, with photomicrographs of microbes and tissues in some instances. They include several skin conditions, which lend themselves to this method of presentation, and some illustrations of native practices and superstitions.

A. G. B.

Terra (Fernando). Organização hospitalar e radiumtherapica do Estado de S. Paulo. [**Hospital Organization and Radium Therapy in the State of S. Paulo.**]—*Brazil-Medico.* 1925. Nov. 7 & 14. Year 39. Vol. 2. Nos. 19 & 20. pp. 259–266; 283–289.

This article is little more than a list of the hospitals and dispensaries of the State of Sao Paulo, which is exceptionally well provided with such institutions. There appear to be over 30 large hospitals and maternity hospitals and more than 70 smaller establishments. Between thirty and forty are mentioned with more or less detail, the character of the buildings, the number and nature of patients treated, and the general arrangements for the reception, examination and treatment of them being briefly stated.

H. Harold Scott.

Bhatia (S. L.). **A Lecture on Blood Sugar and Sugar Tolerance.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. pp. 565–570. [9 refs.]

The lecturer opens by pointing out in a striking manner the important part played in the body's economy by glucose metabolism, and that this is especially so in vegetarian races such as those in India. Maclean's method was used by the author for estimating the blood-sugar, and Maclean's data are derived from the study of Western nations. Here the "fasting level" varies from 0·07 to 0·12 (average 0·1) per cent. After the intake of carbohydrate meal it rises for about

half-an-hour, and then declines to the fasting level about two hours later. The maximum reached is 0·17 per cent. The threshold value is 0·17 to 0·18, for beyond that, excess leads to glycosuria. These figures are different in vegetarian races. The fasting level of those the author examined averaged 0·149 per cent. (0·084 to 0·242). A dose of 50 gm. glucose (or in some cases cane-sugar was used) produced a rise in the usual time, followed, as before stated, by a fall to or near the pre-glucose level. The maximum reached was much over that in Europeans, but the figures vary somewhat. They are fully given in the paper. We need not follow the author into his various points, such as his views on HAMBURGER's theory of the "threshold value," or the part played by various endocrine organs, and the various factors of the equalization of entrance and exit of the sugar of the blood; suffice it to say in reference to the last-named that he thinks conversion into glycogen by liver and muscles is quantitatively the most important factor. His main contention is that the habitual use of large amounts of carbohydrate lead not only to a higher "fasting level," but to a lower "threshold level" (about 0·15 per cent.); and therefore more ready production of glycosuria. He suggests that this work shall be continued and amplified in several directions, and concludes with this moral to his countrymen: "Eat less sugar and starch and take more physical exercise."

W. D. Halliburton.

VAN THIEL (P. H.). Was ist *Rickettsia melophagi*? [**What is** *R. melophagi*?]—*Arch. f. Protistenk.* 1925. Vol. 52. No. 3. pp. 394–403. With 1 text fig. [18 refs.]

The author allows that the nature of Rickettsia bodies is still insufficiently known and, as regards *Rickettsia melophagi*, admits that there is a stage when the degeneration products of the nuclei of the Crithidia of the Melophagus have an extraordinary resemblance to Rickettsia bodies. But the distinctive characters of Rickettsia bodies are that they do not give the volutin reaction, are not dissolved in 5 per cent. solution of carbonate of soda, and are not destroyed by hydrolysis in hydrochloric acid.

A. A.

CASTELLANI (Aldo). **Phosphorus in the Treatment of Various Diseases.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 2. Vol. 28. No. 21. p. 377. [4 refs.]

The author gives Oleum phosphoratum of the British Pharmacopoeia for various diseases. It is supplied by Martindale & Co. in ampoules containing either 5 minims of the pure oil or $\frac{1}{2}$ minim in 10 minims of almond oil. On its use in oriental sore he has already reported [see this *Bulletin*, Vol. 20, pp. 576 (where the dose was incorrectly given) and 874]. The best results are obtained in old intractable cases with extensive ulceration; the oil is applied externally and in nodular cases injected. The external application was followed by healing in a case of granuloma inguinale which had resisted tartar emetic; Donovan bodies were found; in a second case it failed. The author regards it as an adjuvant to quinine in chronic malaria; half to three

minims are given subcutaneously twice a week. In two cases of osteomalacia the results of its use were encouraging. Care should be taken by the user and the late action on the liver should not be forgotten.

A. G. B.

D'Amato (H. J.). Toxicidad del bismuto coloidal por vía endovenosa. [**Toxicity of Colloidal Bismuth given Intravenously.**] – *An. Inst. Modelo Clin. Méd.* Buenos Aires. 1924–25. Vol. 9. No. 1. pp. 140–156. [12 refs.]

The author has undertaken some important experiments on guineapigs, rabbits and dogs to test the toxicity of bismuth intravenously. He finds that colloidal bismuth can be given in far higher concentration than has been employed hitherto without harmful effects. Signs of toxic action were tremors and convulsions, congestion and haemorrhage in the kidney, liver and intestine. In guineapigs the toxic dose was a variable one, between 0·095 and 0·035 gm. per kilo body-weight; the higher concentrations, up to 4 per cent., never produced "shock" or embolism, and death, when it occurred, was associated always with signs of bismuth poisoning. The drug is cumulative when a fixed amount is given daily. Rabbits also have a varying sensitiveness to bismuth, but less so than guineapigs, and the lethal dose is somewhere about 0·019 gm. per kilo body-weight. A certain degree of tolerance can be acquired so that twice the dose is needed to kill an habituated animal as compared with a first injection. Guineapigs acquire no such tolerance. Dogs react more strongly, and anything above 0·009 gm. per kilo may lead to symptoms of poisoning, though some dogs can take as much as 0·02 gm. per kilo.

H. Harold Scott.

Churchman (John W.). **Intravenous Use of Dyes.** – *Jl. Amer. Med. Assoc.* 1925. Dec. 12. Vol. 85. No. 24. pp. 1849–1853. [9 refs.]

Though this paper would at first appear to have no special relation to tropical medicine its consideration is apposite because the general use of such compounds as mercurochrome 220 has been advised in malaria and plague [*ante*, pp. 142–3]. Dr. Churchman in 1913 studied the fate of gentian violet in the animal body and concluded from these and other experiments that it was not possible to kill organisms circulating in the blood by intravascular injection of this drug, and like conclusions have been reached by other experimenters. Evidence, however, from the clinical side seems to conflict with this conclusion, and it is the author's object to see whether these apparent contradictions can be harmonized. He begins by discussing the nature of septicaemia, and writes :—

"Perhaps we might describe the condition as one which arises when, as a result or complication of a focal infection (which itself may have produced severe symptoms, slight symptoms, or no symptoms at all), the protective barrier between bacteria and host has broken down. Organisms have therefore appeared in the blood, the disease has ceased to be local, and its gravity has at once greatly increased. This focal infection may be obvious (like an inflamed tonsil), or it may be hidden (like an infected heart valve), or it may be difficult and occasionally impossible to demonstrate; but portal of entry into the blood stream there

must have been . . . The micro-organisms have not originated in the blood. They have come somewhence and are going somewhither. Their source is the focus of infection; their destiny, other organs, in which they may set up lesions, or the filtering organs (lymph glands, etc.) where those of them which have escaped the antibacterial defensive mechanism of the circulating blood are either in part or in whole destroyed or eliminated. Eliminate their source, as by complete excision of the focus, and you cut off the supply."

The mere presence of the bacteria in the blood is not the most serious feature. The matter is further complicated by the varying severity of blood infections with bacteria, such as *Staphylococcus aureus* on the one hand and *Streptococcus haemolyticus* on the other. This by itself might account for the conflicting evidence. The striking successes may be due to coincidence, and there is risk of the failures being overlooked; but failures in chemotherapy are inevitable. A bar to experiment is the unfortunate fact that a true bacterial septicaemia is difficult to produce in laboratory animals, and this is one of the reasons why the chemotherapy of bacterial disease lags behind that of parasitic disease.

When dyes such as gentian violet are injected into the blood stream they are rapidly carried to certain organs in which they remain in some concentration for a fairly long period; it is possible that at these sites they may have a much better chance of exerting their effects.

When a syphilitic chancre is cured by an arsenical the effective contact must have been made locally and not in the blood stream. Bacteriostasis, a word introduced by the author and signifying inhibition of growth of bacteria, may play a part in the results reported.

"The dye may only stop motility, it may check sporulation, it may prevent fission, it may produce a curious condition of the bacteria which can only be described as suspended animation, a condition in which they lie dormant for long periods of time, finally becoming active and virulent again; or it may cause actual death of the organism."

It has been experimentally proved, for gentian violet and other triphenylmethane dyes, that even in high dilution they possess the power of checking the reproductive mechanism of bacteria. If the blood stream and through it the tissues could be kept in a condition inimical to the growth of bacteria this aid might enable the patient to turn defeat into victory. Moreover, the dye may similarly reduce the activity of toxins, as has been shown to occur with fluorescent eosin (Flexner and Noguchi). A stasis or inhibition of toxin would account for a favourable result just as a stasis or inhibition of bacteria.

Finally, the failure of dyes to effect a "sterilisans magna" under experimental conditions does not absolutely preclude the possibility of their efficacy in the treatment of septicaemia.

A. G. B.

Seidelin (H.). Note sur l'emploi de quelques couleurs d'aniline comme désinfectants. [**The Employment of Aniline Dyes as Disinfectants.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 55–57. [3 refs.]

Working alone in Belgian Congo, where major operations have to be done under bad conditions and without skilled assistance, Dr.

Seidelin has since 1918 employed for the skin, instead of tincture of iodine, a solution recommended by McLeod and Bevan-Brown :—

Brilliant Green	...	...	...	1 gm.
Crystal Violet	...	...	...	1 gm.
Alcohol (50 per cent.)		...	...	300 cc.

It contains less alcohol than Tr. Iodi, and is therefore less expensive. Owing to its colour, it is known as " Blue." It has no irritating effect and can be used on mucous membrane ; he often applies it to an aseptic wound without harmful result. Later he has used it for disinfection of septic wounds and ulcers ; he and others find it excellent for ulcus tropicum, and only less successful than complete excision.

A. G. B.

i. Straub (M.). Tetrachloorkoolstofvergiftiging in twaalf gevallen. [**Twelve Cases of Carbon Tetrachloride Poisoning.**]—*Geneesk. Tijdschr. v. Nederl-Indië.* 1925. Vol. 65. No. 5. pp. 624–645. With 3 figs. on 1 plate. [16 refs.]

ii. Kouwenaar (W.). Tetrachloorkoolstof als mijnwormmiddel. [**Carbon Tetrachloride as a Vermifuge in Hookworm Disease.**] — *Ibid.* pp. 646–657.

i. After a mass cure on an estate Straub saw 8 cases of carbon tetrachloride poisoning, 3 (1 fatal) in 350 Chinese, 5 (1 fatal) in 50 Tamils, none in 600 Javanese men and 400 Javanese women. He quotes also 4 cases of poisoning after administration of the drug at the hospital, 3 of which were fatal (1 Tamil, 1 Chinese, 1 Javanese), whilst 1 Javanese woman recovered. Apart from 2 fatal cases in which 2½ and 3 cc. had been given, the dosage was 2 cc. (Chinese and Javanese) and 1½ cc. (Tamils), together with 45 cc. 50 per cent. magnesium sulphate. The drug used was pure according to the tests recommended by the Council on Pharmacy and Chemistry of the American Medical Association, except for a slight difference of the specific gravity (1·598 instead of 1·588 at 25° C.).

The clinical histories of the cases and the post-mortems of the fatal ones are quoted in detail and represented also in tabular form. All cases showed signs of disturbance of function of liver and kidneys. The anatomo-pathological picture was the usual one.

According to expectation in this toxic type of jaundice the serum in the more serious cases gave a positive direct as well as indirect bilirubin reaction of Hymans van den Bergh. The lesions to the kidneys explain the frequent absence of bile acids as well as urobilin from the urine notwithstanding the serious disturbance of the liver function. This failure of the kidneys may be caused by products of autolysis of the liver (Roger, *Presse méd.*, 1918). The lighter cases all showed dropsy, which was not found in the more serious ones. Straub thinks that the slight damage done to the liver in the first group stimulates this organ, resulting in increased metabolism and production of more water which cannot be excreted by the affected kidneys. In the more serious cases this rise of metabolism is not to be found.

Straub's conclusion is : Until all the circumstances predisposing to carbon tetrachloride poisoning are known and can be excluded before the cure, mass cures with carbon tetrachloride, either pure or impure, in any dosage, given in any way, are not to be allowed.

[Ref. thinks that, in view of the apparent harmlessness of the drug in several similar instances, an experience like this should in the first place incite to a closer chemical and toxicological examination of the drug used.]

ii. Kouwenaar gives a symposium of 29 cases (17 Tamils, 7 Javanese, 2 Javanese women and 3 Chinese) of carbon tetrachloride poisoning, of which 4 died (2 Tamils, 1 Javanese woman, 1 Chinese). The dosage was not more than 3 cc. of the pure drug. The cases showed the usual features. Contrary to STRAUB'S experience a marked urobilinuria was present nearly throughout, whilst HAY'S bile acid reaction was positive in cases of clinical jaundice. The biphasic Hymans van den Bergh test was found in 3 out of 5 jaundice cases and in one case without clinical jaundice. In one case Kouwenaar noticed dropsy, in two cases uraemia (1 fatal) ; he thinks that only in serious cases does damage to the kidneys occur. The anatomo-pathological reports show the usual characteristics of carbon tetrachloride poisoning ; in one case there was a pre-existent cirrhosis and cancer of the liver.

The author seriously discountenances the use of the drug even for individual cures.

W. J. Bais.

SMITS (E.). Een eenvoudige reactie bij het onderzoek op de zuiverheid van tetrachloorkoolstof. [**A Simple Reaction for Testing the Purity of Carbon Tetrachloride.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 821–830. [19 refs.]

The advantages of carbon tetrachloride as an anthelmintic are well recognized and account for the attempts to show that the cases of poisoning by the drug are not caused by carbon tetrachloride itself, but by impurities. The series of tests made up by the Council on Pharmacy and Chemistry of the American Medical Association do not, according to Smits, guarantee a uniform pure quality of the drug. He describes a simple test (taken from LUNGE and BERL, Chemisch-technische Untersuchungsmethoden) by which the presence of carbon sulphide is easily shown :

10 cc. carbon tetrachloride are mixed with 10 cc. of a 10 per cent. alcoholic solution of caustic potash. After 1 hour 5 cc. 30 per cent. acetic acid are added. Further addition of a few drops of copper sulphate solution produces a yellow sediment within 2 hours, if carbon sulphide is present.

The same reaction may be used for quantitative determination :—

50 gm. carbon tetrachloride is mixed with equal parts of the alcoholic solution of caustic potash and left to stand for a few hours ; then it is shaken several times with 100 cc. water. The washings are collected and titrated with copper sulphate solution (12,485 gm. of the crystals to 1 litre water), which is added till a drop of the mixture shows free copper sulphate (brown colour by contact of a drop of the washing with a drop of potassium ferrocyanide solution on filtering paper). 1 cc. of the copper sulphate solution is equivalent to 0·0076 gm. of carbon sulphide.

In an addendum another qualitative test is described :—

10 cc. carbon tetrachloride are mixed with 1 cc. spiritus fortior and 1 cc. of a reagent consisting of 0·5 gm. lead acetate, 20 cc. water and 20 gm. caustic potash. 1 part of carbon sulphide in 100,000–200,000 parts of carbon tetrachloride is shown by a brown or black discolouration of the watery part of the mixture.

In samples of the carbon tetrachloride with which STRAUB and KOUWENAAR had cases of more or less serious poisoning (see above) the author found 0·6 per 1,000 carbon sulphide (i.e., less than the maximum quantity allowed by the Council), but other impurities were present the chemical character of which could not be found out with certainty.

Further chemical research on this subject appears to be necessary.

W. J. Bais.

SANTOS (José K.). **A Pharmacognostical Study of** *Chenopodium ambrosioides* **Linnaeus from the Philippines.**—*Philippine Jl. Sci.* 1925. Dec. Vol. 28. No. 4. pp. 529–547. With 41 figs. on 5 plates. [16 refs.]

Of the 50 species of Chenopodium only two or three contain oil of medicinal value. The principal source of chenopodium oil is *Chenopodium ambrosioides* var. *anthelminticum* A. Gray, which is extensively cultivated in Maryland and Missouri. *C. ambrosioides* Linnaeus is the species found in the Philippines where it is widely distributed and the most available local source of the oil. This investigation was undertaken to decide what part of the plant should be used for distillation of the oil. The oil was found to be largely confined to the glandular hairs, which are described as sac-like, and to the embryo. The glandular hairs are specially abundant on both sides of the leaves, on the upper half of the ovary when this is nearly mature, in the crevices or depressions between the ridges on the young portion of the stem and on the surface of the calyx. The figures illustrate these and other points. It is concluded that to obtain the greatest yield of oil the entire plant, except the old part of the stem, should be used, before the fruits and leaves become too mature. The plant should be collected after most of the flowers are open. It is not stated whether wild or cultivated specimens are the better, but it is mentioned that in wild plants in a dry place the glandular hairs were more abundant than in watered plants in cultivation.

A. G. B.

ESSER (A.). Tödliche Vergiftung mit Oleum Chenopodii. [**Fatal Poisoning by Oil of Chenopodium.**]—*Klin. Woch.* 1926. Mar. 19. Vol. 5. No. 12. pp. 511–513. [10 refs.]

The conclusions are to this effect : A boy of 8 received twice or thrice daily for ten days 10 drops of oil of chenopodium, in all 8 gm. He became ill on the 11th day and on the 13th died with cerebral symptoms. The autopsy showed acute emphysema of the lung, slight subacute inflammation of the ileum, cloudy swelling of the liver and kidneys, hyperaemia of the brain and its membranes. Histological examination revealed pronounced fatty degeneration of liver and kidneys, considerable desquamation of kidney epithelium, severe degenerative changes in the endothelium of liver and kidneys, almost complete disappearance of suprarenal fat, and cerebral hyperaemia. The fat

present was neutral fat. The morbid changes point to a pure parenchymatous poison and correspond well with the chemical composition of the oil. These changes do not appear to be specific with the possible exception of the endothelial changes.

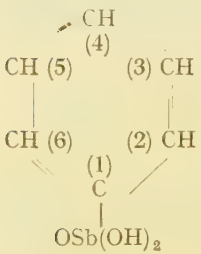
A. G. B.

Uhlenhuth (Paul), Kuhn (Philalethes) & Schmidt (Hans). Chemotherapeutische Antimonstudien. [**Chemotherapeutic Studies on Antimony.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 623–650. [66 refs.]

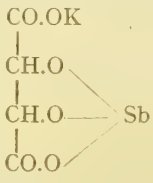
This is an account of chemical and pharmacological work on antimony compounds, which resulted in the introduction of the drug known as "Stibenyl" and more recently of "Stibosan" and "Antimosan." Though antimony compounds have given good results in fowl spirochaetosis and rabbit syphilis, clinical trials have shown that in man they are less valuable anti-syphilitics than arsenic, mercury and bismuth. There is a considerable body of evidence for their value as trypanocidal agents in man and animals, now perhaps only as adjuncts to "Germanin" (Bayer 205). Their value in kala azar, bilharziasis, etc., is well known.

The compounds dealt with in this paper were tested on mice infected with dourine, intraperitoneal injections being made on the third day after infection. The results are based on one injection in each case, and this no doubt accounts for the unfavourable verdict on many of the drugs dealt with. The method is, however, suitable for picking out particularly useful drugs.

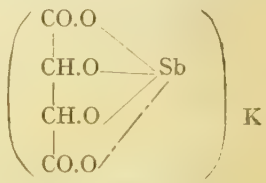
The first two drugs "Stibenyl" and "Stibosan" are derivatives of phenylstibinic acid (Formula I) whilst the third "Antimosan" belongs to the "emetic" series of which sodium and potassium antimonyl tartrates (Formula II*a* or II*b*) are the best known examples.



(I)



(II*a*)



(II*b*)

The difference between the two series is that in the phenylstibinic acid group (Formula I) the therapeutically active element, antimony, Sb, is united directly to carbon whilst in the "emetic" series (Formula II*a* or II*b*) it is joined to oxygen and only through oxygen to carbon. Further, in the first series the antimony is quinquevalent, whilst in the second it is believed to be tervalent.

In the first series it is recognized that variation in the toxicity and therapeutic activity of the antimony is possible by substitution of one or more of the hydrogen atoms in positions 2 to 6 in the benzene

hexagon by other atoms or groups such as chlorine (Cl), or the amino- —$(NH)_2$ or hydroxyl (OH) groups. Illustrations of these variations are shown in the following table :—

Name of substance.	Minimum lethal dose. mgm.	Dose usually curative.* mgm.	Antimony in dose usually curative. mgm.	Remarks.
1. Sodium 4-acetylamino-phenylstibinate (Stibenyl) $CH_3CO.NH.C_6H_4.SbO(OH)ONa$.	12	5 (1–2 days)	1·6	Well borne. Curative dose† 7 mgm.
2. Free acid of above in suspension in water.	12	5 (1–2 days)	1·6	Badly borne.
3. Amine salt of 4-amino-phenylstibinic acid $NH_2C_6H_4.SbO(OH)OAm$.	8	5 (2 days)	2·0	Badly borne.
4. Sodium-4-urethano-phenylstibinate $C_2H_5.COONH.C_6H_4.SbO(OH)ONa$	5	(2 days)	0·7	Badly borne.
5. Sodium 3-acetylamino-phenylstibinate $CH_3CO.NH.C_6H_4.SbO(OH)ONa$	8	—	—	Trypanocidal dose‡ 5 mgm. (1 day)
6. Sodium 4-hydroxy-phenylstibinate $HO.C_6H_4.SbO(OH)ONa$	8	2 (1–2 days)	0·84	Badly borne.
7. Sodium phenylstibinate $C_6H_5.SbO(OH)ONa$	2 to 3	—	—	Badly borne.
8. Sodium 4-chlorophenyl-stibinate $Cl.C_6H_4.SbO(OH)ONa$	1	—	—	Badly borne. No trypanocidal effect.
9. Sodium 3-chloro-4-acetylaminophenyl-stibinate (Stibosan) $Cl.(CH_3CO.NH)C_6H_3.SbO(OH)ONa$	5	2 (2 days)	0·62	Moderately well borne.
10. Free acid of above suspended in water.	6 to 8	—	—	Badly borne.
11. Sodium 3-chloro-4-aminophenylstibinate $Cl.(NH_2)C_6H_3.SbO(OH)ONa$	5 to 6	—	—	Trypanocidal dose‡ 1 mgm. (2 to 3 days)

* Cured most of the mice. † Cured all mice. ‡ Caused temporary disappearance of trypanosomes.

It will be seen that comparatively slight changes in the structure of these compounds produce considerable differences in their toxicity and therapeutical action ; thus, the substitution of chlorine for a hydrogen atom in position 3 changes "Stibenyl" (1) into "Stibosan" (9), and while increasing the toxicity (M.L.D. — 5 instead of 12 mgm.) also increases the curative power, the dose usually curative being now 2 in place of 5 mgm.

The replacement of the acetylamino-group of "Stibenyl" by chlorine as in No. 8, on the contrary increases the toxicity largely and at the same time destroys the trypanocidal action.

In the emetic series there are three components, the base, potassium (K) in this instance, the active element antimony (Sb) and the acid radicle, in this case tartaric acid. All these components can be and have been varied (compare Farghер & Gray, *Journ. Pharm. Exp. Ther.*, 1921, Vol. 18, p. 341), and in general it has been supposed that

no matter how the base and the acid radicle are varied in such compounds, the toxicity and therapeutic activity are determined solely by the amount of antimony present, though when potassium is replaced by a therapeutically active base, such as quinine, there may be additional activity due to the quinine. One of the most important points made in this paper is that by making the acid radicle a catechol (1 : 2–dihydroxybenzene) derivative, definite variation in the action of the antimony becomes possible with further changes in the constitution of the molecule. Further, the products are stable to alkali and can be injected intramuscularly as well as intravenously. "Antimosan" produced in this way has an M.L.D. of 8 mgm ; 1 mgm. causes the disappearance of trypanosomes from dourine-infected mice in three hours but they return in 10 to 15 days ; an initial dose of 2 mgm. causes their disappearance without return. Tartar emetic on the contrary was found in this series of experiments to have M.L.D. 0·8 to 1 mgm.

Trypanosomes disappeared in three hours after a dose of 0·5 mgm. but returned in from 13 to 20 days, and with one exception it was not found possible to ensure their complete disappearance.

Clinical trials with "Antimosan" are still in progress but it has been found less useful than stibosan in kala azar though promising results have been obtained with it in multiple sclerosis.

T. A. Henry.

Mattei (Ch.). Rythme général et rythme nycthéméral de l'élimination urinaire du chlorhydrate d'émétine absorbé par la voie hypodermique. [**The General Rhythm and the 24-Hour Rhythm of Urinary Excretion of Emetine Hydrochloride given Subcutaneously.**] —*C.R. Soc. Biol.* 1925. Dec. 11. Vol. 93. No. 36. pp. 1449–1452. With 2 charts in text. [2 refs.]

The author has shown that the excretion of emetine is discontinuous and prolonged. (This *Bulletin*, Vol. 16, p. 243.) The drug appears in the urine 20–50 minutes after the hypodermic injection of 0·04 gm., but during a course of treatment not more than about one-sixth passes by that channel. The elimination proceeds by fits, active periods alternating with periods when little or none is found in the urine. The jerky curve is illustrated. Daily observations show that elimination in patients who have received 0·16 to 0·58 gm. in 3 or 6 days may last 5–8 weeks. Studying the 24-hour rhythm, the author found that during a course of treatment the day excretion exceeds that of the night in the proportion of 2 or 3 to 1 ; at the end of the course the proportions are about equal and during the period of discontinuous excretion the night emetine exceeds the day emetine. These observations are explained by a rapid excretion of some of the circulating emetine shortly after injection, and hence in the day, whereas later it is emetine from the tissues and viscera that is released.

A. G. B.

Beretervide (Enrique) & Pozzo (Fernando). Polineuritis emetínica. [**Polyneuritis due to Emetine.**]—*Semana Médica.* 1925. Nov. 26. Vol. 32. No. 48. (1663). pp. 1366–1367.

A child of 2½ years was attacked by dysentery, passing 20 stools daily. Treatment with emetine was undertaken and in 18 days 0·35 cgm. had been administered. The dysenteric symptoms improved within the first

week, but the drug was continued as the temperature remained above normal. The patient now showed general weakness, inability to swallow, could not stand and had difficulty in grasping objects. These symptoms did not disappear for a month after stopping the emetine. Five weeks later the dysentery returned and emetine was again given, 0·01 mgm. daily for six injections, followed by enemas of 2 per cent. Yatren 105 with excellent results. The case is recorded because it is believed to be the first instance of emetine poisoning in a child.

H. Harold Scott.

Béguet (M.). Etudes sur l'action thérapeutique des ferments lactiques. Première partie. Les doses massives de cultures fraiches de ferments lactiques dans le traitement des entérites. [**Large Doses of Fresh Cultures of Lactic Ferments in the Treatment of Enteritis.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Sept. Vol. 3. No. 3. pp. 299–312. [2 refs.]

The author uses pure cultures, 24 hours to four days old, of lactic ferments in separated milk or, rarely, in vegetable bouillon with lactose, in daily doses of 200–800 gm. for infants and 500–1500 gm. for adults. The germ is a diplococcus from the butter industry, some of the reactions of which are given; it develops readily at summer temperature in Algeria. Instructions are given for domestic preparation of the ferment. Of infantile enteritis 350 cases were treated and of acute or chronic enteritis in older persons 160, while there were 42 cases in which the intestinal symptoms complicated an infectious disease.

The results were rapid reduction of intestinal fermentation, deodorization and regularization of the stools; there is also a preventive action in infants, in the hot season or after weaning. The author suggests that the systematic use of these cultures will lead to a notable diminution of infantile enteritis in Algeria. Details of cases are given. [No bacteriological investigation is mentioned.]

A. G. B.

Burnet (Et.). Actions d'entrainement entre races et espèces microbiennes. [**Transmission of Characters from One Microorganism to Another.**]—*Arch. Inst. Pasteur de Tunis.* 1925. Dec. Vol. 14. No. 4. pp. 384–403. [20 refs.]

This is a very interesting paper dealing with certain general biological characteristics of bacteria and especially with the transmission of properties, due to juxtaposition during growth. The character chiefly studied is that of flocculation by heat. Thus *M. melitensis*, which is not thermo-agglutinable, may be rendered so by growth alongside the thermo-agglutinable *M. paramelitensis* in a divided collodion sac. It is not even necessary that the *paramelitensis* should be living; for if the killed organism be added to bouillon, which is then sown with *melitensis* and incubated for 3 to 5 days, the latter will, when re-sown on nutrient agar medium and incubated 3 days, show itself to be thermo-agglutinable. Actual growth of the organism is necessary to acquirement of the new property.

Antigenic characters as well as physico-chemical may be transmitted. Thus *M. melitensis* acquires the antigenic characters of the *paramelitensis* by culture alongside the latter -such as agglutinability by normal sera, non-agglutinability by anti-melitensis serum, diminution of agglutinogenic power in the rabbit. The acquirement of new

characters is in the direction *melitensis* to *paramelitensis* and not, as a rule, the reverse. This acquirement of characters by members of the *melitensis-abortus* group may be called inter-specific. But it may be also non-specific, that is to say, modification of thermo-agglutinable property and of sero-agglutinable property may be acquired by one species of organism from another which is in no way related to it.

The bearing of these findings on malignant growth, on the nature of the bacteriophage, etc., is commented on. Bacteria which are attacked by the bacteriophage, and which are resistant, take on a coccal form, surround themselves by a mucous capsule and have a raised virulence. Such resistant organisms are inagglutinable and their fermentative characters become modified. The Shiga bacillus ferments maltose; the Flexner bacillus ferments glucose, laevulose, mannite, and so on. This influence of symbiosis upon the characters of bacteria, their mutations, their acquisition of permanently changed characters, etc., may well afford material for intensive study.

The study here published of transmission of certain characters from one organism to another is an important contribution to more general and complicated problems.

W. F. Harvey.

Flu (P. C.). Komplementbindingsproeven met konijnen-serum tegenover bacteriophagen en bacterie-extracten. [**Complement Fixation Test with Rabbit Serum for Bacteriophage and Bacterial Extracts.**]— *Nederl. Tijdschr. v. Geneesk.* 1925. Nov. 21. 69th Year. 2nd Half. No. 21. pp. 2285–2300. [9 refs.] also in German in *Cent. f. Bakt.* I. Abt. Orig. 1926. Jan. 30. Vol. 97. No. 2-3. pp. 224–240. [9 refs.]

The "bacteriophage" discovered by d'Herelle is regarded by him as an obligate parasite. Not only does he so regard it, but he also maintains that it is a parasite of *B. coli* and is a single species, which undergoes much modification in becoming parasitic upon another species of bacteria. The proof of unity of species was based largely upon complement fixation tests. Rabbits, immunized with the clear bacteriophage bouillon culture of an organism such as the Shiga bacillus, furnish a serum which gives complement fixation with the bacteriophage used and also with the culture of the organism. Not only does the serum react thus with these antigens however, but also with other bacteriophage antigens, such as haemorrhagic septicaemia and plague. Other workers have contested these findings of d'Herelle and, it may be, regard bacteriophage as of multiple species. They ascribe the positive complement fixation tests to non-specific antigen common to all bacterial substance, and so on. Flu takes an entirely different view of these complement fixation tests and prefers, in explanation of them, the known occurrence of complement fixation effect that is attachable to rabbit serum in particular. He sets out certain results of his experimentation, which afford a basis for this view:—

(1) The serum of a certain percentage of normal rabbits gives a complement fixation reaction with bacteriophage and with extracts of various bacteria, though seldom with bacterial suspensions, which cannot be differentiated from a specific reaction.

(2) The serum of rabbits, which have received bacteriophage antigen intravenously, gives a complement fixation reaction not only with the bacteriophage which was used in immunization, but also with all other

bacteriophages and filtrates of old bouillon cultures of various bacteria, though very seldom with bacterial suspensions.

(3) The serum of rabbits, which have been immunized with extracts of bacteria and with filtrates of old bouillon cultures of these bacteria, sometimes gives only specific complement fixation, although it may also give a positive reaction with non-specific bacteriophage and bacterial extracts.

(4) The serum of rabbits, which have been immunized with bacterial suspensions, gives as a rule a positive complement fixation reaction only with those bacteria which have been used in the immunization.

D'Herelle then is not entitled to draw conclusions as to the unity of species of bacteriophage from his complement fixation experiments, although there is nothing in these tests actually to negative the idea of derivation of all bacteriophages from the one form. It is the view of Flu, however, that the results of the experiments performed by him and others, in which normal rabbit sera as well as immunized rabbit sera give complement fixation with a whole range of antigens, are to be explained by the known tendency of this to happen with rabbit serum—that is to say, that the phenomenon is not attributable to the singleness of species of the bacteriophage nor to a non-specific common protein of lysed bacterial substance. He issues a warning to experimenters working with rabbit sera in complement fixation tests of all kinds to beware of this tendency.

W. F. Harvey.

Kollath (Werner) & Leichtentritt (Bruno). Ueber die fragliche Bildung von Vitamin Bakterien. [**Do Bacteria produce Vitamins ?**—*Cent. f. Bakt.* I. Abt. Orig. 1926. Jan. 30. Vol. 97. No. 2-3. pp. 119–125. With 8 charts in text. [13 refs.]

The questions which the authors set out to answer are :—

(1) Whether bacteria can produce sufficient vitamin to enable them to be used for the prevention or cure of deficiency disease ; (2) whether the growth promoting effect of certain bacteria on other bacteria, such as the influenza bacillus, is due to vitamin C.

The diet, a scorbutic one, given to the experimental guineapigs consisted of sterilized oats and sterilized dried milk. Intestinal bacteria isolated from normal guineapigs were chiefly used, and special investigation was made into the vitamin producing qualities of Friedlaender's bacillus, which has been shown to promote the growth of the influenza bacillus.

Yeasts have been shown to produce vitamin B when grown on agar containing a substance which promoted the growth of the yeast, such as potato. A potato medium therefore was tested along with ordinary nutrient agar. The testing guineapigs were fed by means of a pipette. As a preliminary, the media used were shown, by feeding experiment, to contain no vitamin, or at all events nothing but negligible quantities. The doses used (total quantities) were 3·5 gm. *B. coli*, 29 gm. bacterial mixture, 13 gm. living Friedlaender's bacillus, and 2 up to 323 gm. of Friedlaender's bacillus heated 30 minutes at 56° C.

The results were that no evidence could be found—

(1) for the production of antiscorbutic vitamin by the bacteria themselves ; (2) of vitamin being taken up from the nutrient medium ; (3) of the identity of true vitamin with the growth promoting substance for the influenza bacillus.

W. F. Harvey.

Iyengar (K. R. K.). **An Attempt to increase the Virulence of a Micro-organism by Method of Culture.**—*Indian Jl. Med. Res.* 1926. Vol. 13. No. 3. pp. 555–557. [2 refs.]

Four strains of *B. avisepticus* were, when freshly isolated, fatal to pigeons in doses (intravenous) of 0·000,000,000,1 to 0·000,000,001 mgm., but had greatly lost in virulence with repeated subculture on ordinary agar. The author attempted to increase the virulence by subculturing on blood agar, which medium had previously been shown capable of maintaining the organism in its original virulent state. The attempt, however, proved unsuccessful after 14 days' daily subculture. No difficulty was experienced in raising the virulence by animal passage.

W. F. Harvey.

Peruzzi (Mario). **A Morphological and Cultural Investigation of *Vibriothrix Zeylanica* Castellani.**—*Jl. Trop. Med. & Hyg.* 1926. Feb. 1. Vol. 29. No. 3. pp. 44–47. With 30 figs. on 2 plates. [8 refs.]

This organism is found in dysenteric faeces and is apt to cause difficulty, if present, in the isolation of *B. dysenteriae* Shiga. One of the outstanding characters of the organism is its polymorphic appearance—it may be vibrio-like, bacillus-like, spirillum-like, coccus-like, filamentous and branched. Claviform and large globose elements are found in cultures. Giemsa staining shows the presence of a highly differentiated nuclear apparatus. Ordinary bouillon cultures were not filtrable, but a certain number of blood broth cultures could be passed through a Berkefeld N candle. The organism caused the death of guineapigs by intraperitoneal injection only in massive doses.

W. F. Harvey.

Hutchinson (C. M.). **Photography from the Microscope.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 449–466. With 25 figs. on 5 plates.

The author gives in some detail instruction and advice on the apparatus and manipulations necessary for the production of good photo-micrographs. He prefers, if any considerable amount of photo-micrography is to be done, the horizontal type of camera to the vertical. The various parts of the microscope are taken *seriatim* in respect of their suitability. A 3 mm. apochromatic objective is better than the 2 mm. For low power photography one of that class of objectives specially designed for the purpose and designated anastigmat, micro-planar, microsummar, or holostigmat is essential, because of the flatness of field which is given. Magnification is preferably obtained by the combination of low power objectives and either high oculars or camera extension. Of these alternatives, camera extension is in many cases the better. For good photomicrographic work an achromatic substage condenser is required. Electric illumination, if available, will be preferred. The operations preliminary to exposure, in their order, are given as :—(1) Centring of microscope to camera ; (2) centring of objectives of microscope ; (3) centring of illuminant through the microscope tube in the absence of objective, condenser, and focussing screen ; (4) centring of substage condenser, with low

power objective and ocular, by bringing the minutest aperture of the iris diaphragm to a focus on the ground glass screen and centring the image of this aperture; (5) Determination of the magnification required and selection of appropriate substage condenser; (6) arrangement of critical illumination; (7) adjustment for even illumination.

The subjects of light filters and of suitable photographic plates receive consideration, as also those of exposure and development.

W. F. Harvey.

Koch (Karl). Ein neuer Apparat zum Zählen von Kolonien. [**A New Apparatus for counting Colonies.**]—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 25. Vol. 96. No. 7-8. pp. 454–456. With 1 text fig.

The ordinary methods of counting plate colonies, if prolonged, involve considerable muscular and eye strain. Koch has invented a piece of apparatus which makes this enumeration perfectly easy. It consists of a three-sided frame with a top formed by a glass plate divided up into the squares which are commonly used to facilitate the counting of colonies. The sides are blackened and shut off all light from the front and laterally. Within the frame is a mirror, plane on one side and concave on the other, capable of rotation about a transverse axis and of being raised vertically. The plate with colonies is placed on the squared glass top and light thrown downwards through it on to the mirror. The observer sees the image of squares and colonies together in the mirror and, if the concave side be used, with some degree of magnification. Greater magnification, if required, could be obtained by the interposition of a lens system between plate and mirror. Ordinarily the colonies are viewed by transmitted light and reflection from the mirror. A dark ground effect can be obtained by using light at right angles, instead of from above downwards. If the colonies are growing on opaque media, the Petri dish must be used inverted and must be strongly illuminated through its rim. Single colonies may very easily be picked off the plate and transferred in subculture without a microscope. The colonies are viewed in this apparatus with both eyes.

W. F. Harvey.

Günther (Reinhard). Beobachtungen ueber klimatische Bubonen bei Seeleuten. [**Climatic Bubo in Seamen.** —*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 546–554. [15 refs.]

The author's conclusions may be quoted first :—Though the etiology and epidemiology of climatic bubo remain uncertain, evidence points to the affection being a venereal disease. At the Hamburg Tropical Diseases Institute 35 cases were studied between 1921 and 1925. Most of the cases occurred in ships' crews. The probable source of infection was in the Mediterranean 3, Africa 6, South America 5, Java 9, Eastern Asia 6, Australia 1, Calcutta 3, Black Sea 2. The patients were between 21 and 31 years of age and all had had promiscuous sexual intercourse abroad. A fact worthy of note is that in one ship at the same time 3 cases occurred, in a second ship at the same time

3 other cases, and in a third ship 2 cases. In two, lesions appeared 4 weeks after leaving Java, in three 8 weeks out from South America, in three 8 weeks from Eastern Asia. The incubation period from the time of coitus to the appearance of the bubo is probably from 3–8 weeks. In 15 the left, in 9 the right, in 11 both inguinal regions were affected.

Constitutional symptoms were minimal, except in one case, neglected over a period of six months, with the pelvic glands involved, in which high fever, cachexia and secondary anaemia were present. Neither splenic nor hepatic enlargement was noted. Eosinophilia as described by others was not present ; in two the mononuclear count was somewhat raised, in others there was a lymphocytosis. In no case was any characteristic blood picture found. In size the swellings varied from a walnut to a man's fist. Deep-seated glands are commonly attacked ; in 62 per cent. the pelvic glands were involved, a point not generally recognized. In one instance the glands in the pelvic basin formed a mass so large, and of such a wooden hardness and so resistant to treatment, that resort was had to X-ray examination to exclude a bony tumour. The tendency to spread and the marked induration is characteristic of some cases.

Though climatic bubo characteristically goes on to abscess formation the degree of periglandular infiltration is as a rule small. Confluent softening seldom occurs and the abscess cavity with its seropurulent necrotic contents is small. Perforation occurs with the formation of fistulae, the surrounding skin being reddish or purple in colour but shows no other changes. Opposed to the findings of many observers (Rost 18 per cent.), breaking down occurred in 77 per cent. of the author's cases (comp. Ruge 40 per cent. and Werth 65 per cent.). Lymphangitis and other inflammatory processes were not observed nor pigmentary changes about the scars.

Two cases presented scars of old chancres on the penis, none other showed any genital lesion. The cases, however, came under observation long after the date of infection. Many observers believe that such a lesion does occur in the form of a pimple, a herpetic rash or a small ulcer which clears up untreated in a very short time (Müller and Justi).

Comprehensive examination of gland juice, etc., by microscopic and inoculation methods shed no light on the etiology of the disease. The histological picture is that of a proliferative inflammation with degeneration of tissues.

The treatment adopted was by intravenous injections of tartar emetic, stibenyl, emetine, etc., local applications, X-rays for deeply situated gland masses and surgical measures when necessary.

H. S. Stannus.

de Bellard (E. P.) & Uribe (César). Contribución al estudio de la poradenitis inguinal subaguda en Venezuela. (Trabajo presentado al IV Congreso Venezolano de medicina Caracas—1925.) [**Subacute Inguinal Poradenitis in Venezuela.**]—80 pp. With 11 charts in text & 40 figs. on 8 plates. [66 refs.] 1925. Caracas : Tipografia Americana.

This work is a useful monograph summarizing our knowledge of a condition which goes by various names—climatic bubo, inguinal adenopathy, etc.—and is a study based on 22 cases under the author's

care. Introductory pages on the history of the opinions held as to the nature of the affection are followed by a succinct account of the clinical forms and course. Dr. Uribe contributes an interesting section on the morbid anatomy and histology of glands removed from 13 cases and of the condition produced in guineapigs, white rats, young rabbits and a monkey by inoculation of material prepared from these glands. Some of the glands removed were hard and fibrotic, with much periadenitis ; others contained necrotic and haemorrhagic foci ; in short, the lesions found varied considerably, as we would expect in a chronic inflammatory condition such as this. These are illustrated by plates of photographs showing the naked-eye and microscopic appearances. A fairly characteristic formation is what is called a "stellar abscess" in which a central homogeneous mass is seen invaded by polymorphonuclears and large mononuclear cells with chromatic inclusions, and external to these a wall of epithelioid cells, but separated by an acellular zone thrown into folds or radiating lines ; hence the name. Inoculation of saline emulsions of glands from two cases gave positive results. In the monkey 1 cc. was injected into the left side of the prepuce. Two weeks later there was a red tense swelling at the base of the penis and in four weeks the inguinal glands began to enlarge, more on the right side. Two weeks later one of these was removed and section showed the "stellar abscesses", but no chromatic inclusions in the mononuclear cells.

The succeeding chapters are concerned with the symptomatology, differential diagnosis, and prognosis, and do not call for detailed mention. The usual methods of treatment are briefly described, the use of emetine, intravenous injection of Lugol's iodine solution, local injection of iodine or iodoform in xylol and paraffin, and the use of X-rays, but the author himself lays stress on early extirpation of the affected glands, and subsequent maintenance of asepsis by hydrogen peroxide followed by mercurochrome dressings.

Pseudo-elephantiasis has been reported as following extensive extirpation, but such has not come under the authors' own observation. The last section of the work consists of a detailed account of each of the 22 cases on which the above study is based.

H. Harold Scott.

Walravens (P.). La meningite cerebro-spinale au Katanga. [**Cerebrospinal Meningitis in the Katanga.** —*Bull. Méd. du Katanga.* 1925. Dec. Vol. 2. No. 6. pp. 256–258.

Whereas in 1923 and 1924 meningococci were found in the cerebrospinal fluid of negro patients three and four times, in 1925 92 examinations resulted in 48 positive findings. Treatment with stock serums having proved unsatisfactory several strains were isolated and tested against serums sent by Sir Spencer Lister from Johannesburg. Lister had isolated strains I, II and III of Gordon and another which he named E. The author's agglutination tests showed that of 15 strains 13 were agglutinated exclusively by serum E, one by I, II and III serums as well, and one by none. The tests were carried out at 59° for three hours.

A. G. B.

i. Schükry (Jchsan). Ueber die Spatzsche Methode zur Schnelldiagnose der Paralyse und ueber das Vorkommen von Paralyse in der Türkei. [**The Spatz Method for Rapid Diagnosis of General Paralysis: the Incidence of General Paralysis in Turkey.**]—*Muench. Med. Woch.* 1925. Nov. 20. Vol. 72. No. 47. p. 2011. [5 refs.]

ii. Schükri (Ahmed). Ueber das Vorkommen von progressiver Paralyse in der Türkei.—*Ibid.* 1926. Jan. 8. Vol. 73. No. 2. pp. 64–65.

i. Of 147 necropsies performed at the lunatic asylum in Constantinople 37 were shown by the Spatz method to be cases of general paralysis, i.e., 25 per cent. This causes the author to doubt the generally accepted view that in Asia Minor though syphilis is common G.P. is very rare. He notes that since modern diagnostic methods (of which he gives a list of seven concerned with C.S.F. examination) have come into use, the percentage of general paralysis at his Institute has risen considerably. In 1923 7·5 per cent. of the male admissions and 2·5 of the female were for this disease. The inference is that formerly many cases were not diagnosed correctly. The calling and place of residence of the 35 cases admitted in 1923 is given and it is stated that peasants from the interior of Asia Minor were among them. The author thinks that time is ripe for an international statistical investigation of the incidence of general paralysis outside Europe, with the aid of modern diagnostic methods. If it is rarer in Asia Minor than in Europe, as he believes is the case, he suggests that the widespread malaria has been a protection.

ii. In this note the author gives information from a Greek and Armenian institution in Constantinople. Of 318 Greek admissions to the neurological section of the hospital in 1923 and 1924 9·5 per cent. were general paralytics and of 164 Armenians 14 per cent. The male paralytics largely outnumbered the female (37 to 6).

A. G. B.

Brown (W. L.) & Brown (C. P.). **A Case of Tularemia.**—*Jl. Amer. Med. Assoc.* 1925. Dec. 26. Vol. 85. No. 26. p. 2033. [1 ref.]

This case occurred at El Paso in Texas. The patient was bitten in the cheek by some largish insect. Within 12 hours the glands on the corresponding side of the neck were inflamed, and within 48 hours all the symptoms of a serious acute septic fever had developed, with drenching sweats and rapid loss of weight—to the extent of 16 lb. in eight days. The site of the bite showed as a large elevated indurated papule having a core which came away on the 8–10th day leaving a punched out hole. Two guineapigs inoculated from the sore died in five days with the typical necrotic foci in spleen and liver; but two others inoculated a month later with pus from the suppurating cervical glands remained quite healthy.

A. Alcock.

Seidelin (H.). Sur le traitement de certains abcès sans incision. [**The Treatment of Certain Abscesses without Incision.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 59–63. [2 refs.]

Among native labourers in Belgian Congo abscesses are common, especially inguinal and crural buboes. These were formerly treated by incision and drainage; but much time was lost and the native put off coming owing to his fear of the knife. For some years Dr. Seidelin has substituted puncture and the introduction of antiseptic solutions. His technique is as follows:—

The puncture is made in the centre of the abscess with a hypodermic needle of fine or moderate calibre and a glass syringe of 2, 5 or 10 cc. For deep abscesses the needle is longer and the bore greater. When the needle reaches the abscess if there is much tension pus may flow into the barrel. As soon as the flow ceases, or the patient complains of pain, inject 1 or 2 cc. of a 2 per cent. solution of novocaine or eucaine containing a very small quantity (0·00015 gm. per cc.) of adrenalin. If there is no flow the injection is made at once. When pain has ceased, or after 2 or 3 minutes, light aspiration is made, but if nothing results a little electrosol is injected (hypochlorous solution prepared by electrolysis)†. Now aspirate again and the pus, now liquefied, flows easily. Continue to wash out by electrosol injections following aspiration till fluid comes out clear, but never introduce so much as to produce pain and tension. After the last irrigation inject some drops or 1 or 2 cc. and leave in the cavity.

This technique was at first adopted for inguinal buboes, punctured daily, with recovery in 5–6 days. In most cases the patient continues at work even when 7 to 8 punctures are necessary. Among cases treated have been crural adenitis, axillary abscess, abscess of face, limbs and perineum. A case is cited of a deep femoral abscess, of the myositis purulenta tropica type (Laigret & Lefrou, this *Bulletin*, Vol. 20, p. 28) on the back of the thigh, in which the needle found pus only after a tough passage of 7 cm., and 15 cc. of chocolate pus came away. Puncture and irrigation was done daily for six days and twice afterwards. After the first irrigation the patient was able to walk to the dispensary, but for precaution was kept in the intervals at rest. Another patient with a similar affection treated by incision and drainage had much more pain and it was a fortnight before he could resume his work. Other cases are briefly cited including one of acute abscess of the hand; here pain was increased by the puncture and an incision was necessary.

Puncture causes little or no pain, recovery is speedier than with incision and the whole procedure is cleanly; large dressings are unnecessary and the skin does not suffer irritation. Again, being without fear the patients do not put off treatment. Both anaesthesia and electrosol injection are necessary. The anaesthetic solution may be purchased in ampoules or prepared on the spot. The electrosol solution is that prepared after the formula of Beattie, Lewis & Gee; ordinary hypochlorite of soda is used by a colleague but is less effective. The only drawback to this treatment is the length of the séance—10–15 minutes—but fewer dressings are required.

† See Beattie, Lewis & Gee, *Brit. Med. Jl.*, 1917, Vol. i, p. 256, where the simple apparatus is figured; 3 per cent. sodium chloride is used.

Dr. Seidelin remarks that according to old authors simple wounds heal more quickly and suppurate less in the tropics than in Europe; with this he agrees and he suggests that for the puncture method there is more scope in the tropics than in Europe.

A. G. B.

ROEGHOLT (M. N.). Appendicitis in Ned.-Indië. [**Appendicitis in the Dutch Indies.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 561–567.

Roegholt maintains that appendicitis is not a "rare" disease in the Dutch East Indies. He comments upon the relativity of the word "rare". With reference to LICHTENSTEIN's remarks (see this *Bulletin*, Vol. 22, p. 679) about the necessity of excluding amoebiasis as an etiological factor, he emphasizes the urgency of appendectomy in acute cases, whatever the cause may be.

[The question of the incidence of appendicitis in the Malay race can be solved only by proper sickness statistics and not by articles, founded upon personal impressions.]

W. J. Bais.

DE LANGEN (C. D.). Polyarthritis epidemica bij kinderen. [**Epidemic Polyarthritis in Children.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 529–539. With 5 charts in text.

Inflammations of the joints in natives of tropical countries are usually to be attributed to syphilis, yaws, or gonorrhoea. Tuberculosis of the joints is not common and gout is rare. The only epidemic joint affection in the Dutch East Indies is dengue.

The author now describes an epidemic of 18 cases of an acute feverish polyarthritis among 30 children in one ward of his hospital. No adults (doctors or attendants) were affected and the epidemic did not spread to other wards. The fever lasted on an average 24 days; a pronounced leucocytosis was found (12,000–21,000). There were no complications and all the children recovered completely. As for the etiology of this epidemic the author is at a loss. Bacteriological examination of the purulent liquor obtained from the joints as well as animal inoculation of the same (monkeys) yielded negative results. The possibility remains open that the gonococcus was responsible, as it was found in 90 per cent. of the girls in this ward. Yet the clinical picture differed widely from gonorrhoeic arthritis and further investigation showed the presence of gonococci in 80 per cent. of native girls at the time of admission to the hospital.

W. J. Bais.

PATTIRADJAWANE. Zeldzame localisaties van het ulcus tropicum. [**Tropical Ulcer in Unusual Sites.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 568–571. With 2 figs. on 1 plate.

Reports upon two cases of tropical ulcer of the penis and three of the labium majus, with fusiform bacilli and spirochaetae in the smears. Ulcus tropicum is most common at Sourabaya during the rainy season.

W. J. Bais.

Pattiradjawane. Reargontherapie bij acute en subacute urethritis gonorrhoica. [**Reargon Treatment in Acute and Subacute Gonorrhoeal Urethritis.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 658–660.

Intra-urethral injections, five times per day, of 10–12 cc. 5 per cent. solution of reargon caused definite disappearance of the gonococci in 10 out of 14 patients with acute urethritis within 5–10 days. This painless treatment is strongly recommended by the author.

W. J. Bais.

Papadopoulo (Jean P.). Pasteurellose uréthrale. [**Urethritis due to a Pasteurella.**]—*C.R. Soc. Biol.* 1925. Nov. 13. Vol. 93. No. 32. pp. 1139–1140.

The author, who writes from the Bacteriological Laboratory, University of Athens, says that six cases of this affection have been studied at Alexandria. It began with epidydimitis, lasting 8–10 days, and fever, followed, without previous coitus, by a discharge which was often chronic and resistant to treatment. In one case the organism was isolated twice from the prostatic fluid and three times from the sperm ; in others it was found in the discharge and the urine. It is a non-motile coccobacillus not coloured by Gram, with bipolar staining (*en navette*), polymorphous but usually oval. It is aerobic, and grows well on the usual media. Its pathogenicity seems to be small. It is slightly pathogenic to the rabbit and more so to man and may be confounded with the gonococcus by unskilled persons.

A. G. B.

Tsurumi (M.). **Early Diagnosis of Smallpox by the Initial Exanthem.**—*Jl. Roy. San. Inst.* 1925. Dec. Vol. 46. No. 7. pp. 299–302.

The observations are based on a study of 103 patients admitted to the Dairen Isolation Hospital in 1917–18. The initial exanthem is classified as haemorrhagic, scarlet-fever-like or measles-like. It was most marked on the vaccinated part, unless ten years had elapsed since the last vaccination. An initial exanthem does not necessarily guarantee a light attack, especially if it is haemorrhagic, but it is most usual in varioloid. It was seen in at least 39 of the 103 patients.

A. G. B.

Cleland (J. B.). **Injuries and Diseases of Man in Australia attributable to Animals and Plants.**—Reprinted from the *Adelaide Medical Students' Society "Review"* by The Mail Newspapers, Limited, General Printers, Adelaide. 8 pp.

This is a separate reprint of a paper already noticed in Vol. 22, No. 4, of this *Bulletin*. It is a compilation from published Australian records of injuries inflicted by aborigines as well as by mammals, fishes, arthropods, leeches, and zoophytes.

A. Alcock.

REVIEWS AND NOTICES.

GERSTMANN (Josef). [Assistent der Universitätsklinik für Psychiatrie und Nervenkrankheiten in Wien.] Die Malariabehandlung der progressiven Paralyse. Unspezifische Therapie der Metalues des Zentralnervensystems mittels künstlicher Erzeugung einer akuten Infektionskrankheit. Mit einem Vorwort von WAGNER-JAUREGG (Julius). [**The Malaria Treatment of General Paralysis. Nonspecific Therapy of Metasyphilis of the Central Nervous System by Artificial Production of an Acute Infectious Disease.**]—pp. vi+ 229. With 16 text figs. 1925. Wien: Verlag von Julius Springer. [Price 12 Gm. (paper cover); 13·20 Gm. (bound).]

The author advises that the benign tertian parasite should be invariably used as the therapeutic agent. The quartan parasite can be influenced less readily by quinine and the malignant tertian is not only too dangerous, but also too apt to relapse. Of two strains of benign tertian parasite in use at WAGNER-JAUREGG'S clinic, one has reached the 100th passage and the other the 85th passage through man without any change in the length of the incubation-period, the height of the fever, the asexual, pathological or therapeutic characters. Neither of the strains have ever come into contact with quinine, and it is suggested that this is the cause of the parasites not being quinine-resistant. [A strain which I have been using continuously for 2½ years, and which has reached its 38th passage, has frequently come into contact with quinine and yet it is not quinine-resistant.—G. de M. R.] Blood withdrawn during the incubation-period has produced malaria in another patient. The incubation-period was longer after intradermal than after subcutaneous blood-inoculation. Successful inoculations have occurred with prepared malarial blood kept for 92 hours. Korteweg's "initial fever" was not always present in patients who had not previously suffered with malaria. As a routine, ·5 gm. of quinine bisulphate are given twice a day by mouth for 3 days followed by once a day for 4 days. No relapses of malaria have occurred. Enlargement of the spleen or liver is rare, although with re-infections enlargements of the spleen are more common. During the past 2 years no gametes have been found although they were present in the early passages. In 19 anopheline mosquitoes fed on paralytics infected with malaria, no öocysts or sporozoites could be found. Mosquitoes fed on similar cases failed to infect 6 other paralytics when allowed to bite them. A few cases did not develop malaria even after 5 inoculations although some of the injections were given intravenously. Re-infection with the same and with another strain produced milder attacks of malaria, and if shortly after the first infection, spontaneous cessation of the fever occurred.

A strain of *S. duttoni* which has been kept alive in mice for 12½ years is still infective for men. The European relapsing fever is unsuitable as a therapeutic agent. Salvarsan and neosalvarsan have no effect on the above strain when in man, but do affect it when in mice. Passage of the strain through the tick did not remove this immunity to salvarsan. Relapsing fever developed after the infected material was injected into the cerebrospinal fluid. Fifty-one days after the last attack of fever, the cerebrospinal fluid of paralytics has carried infection. The length of the incubation-period is from 3 to 11 days, but varies with the number of spirochaetes injected. The fever is very irregular; there may be fever-free intervals of 48, or more, hours' duration, and the total duration of the fever may be several months. The fever cures itself, but, in spite of generous salvarsan treatment, relapses occur until the infection dies out. There are usually no severe symptoms. There may be a marked leucocytosis during or immediately preceding the fever. Although natural immunity to relapsing fever is very rare, STEINER has been unable to

re-infect cases 2½ years after the primary infection. From the therapeutic aspect malaria appears to be preferable to relapsing fever for the treatment of general paralysis.

Gerstmann reports on the results of the treatment of 400 cases of general paralysis with malaria, patients in all stages of the disease being included. Two years after treatment good remissions were present in 33 per cent. and incomplete remissions, or stationary results, in 14·25 per cent. These figures exclude all cases dying of intercurrent disease during remissions and all cases whose after-history could not be traced. Three complete remissions have now persisted for from 6½ to 7½ years. Comparisons are given between the number and duration of remissions in untreated cases and those treated with malaria, to the advantage of the latter. The percentage of remissions is from 4 to 7 times greater in the treated cases. With regard to the mode of action of malaria, the author states that we do not know anything about the cause of the improvement, except that the fever is not the essential agent.

This book should prove of value to those actively engaged in the treatment of general paralysis. The majority of the chief points relating to tropical diseases are summarized above. A comprehensive bibliography is included.

G. de M. Rudolf.

MENSE (Carl). **Handbuch der Tropenkrankheiten.** 3rd Edition. Vol. 4.—pp. xii+762. With 149 figs. & 29 plates. 1926. Leipzig: Verlag von Johann Ambrosius Barth. [Price Rm. 66 unbound, 70 bound.]

The experience of medical men in Europe during the war has led to the general recognition of the fact that many of the so-called tropical diseases are of considerable importance to others than practitioners in the Tropics. Happily, many of the diseases with which tropical medicine is concerned are no longer endemic in this and neighbouring countries, but several of them are of much less rare occurrence in Europe than was formerly supposed; and, in these days of easy and rapid travel, the general practitioner at home will often be confronted with imported cases, the diagnosis and treatment of which require more than a nodding acquaintance with tropical medicine. This seems to be well appreciated in Germany, as shown by the continued output of large works on the subject, the sale of which can scarcely be confined to residents in the Tropics.

In the fourth volume of Professor Mense's well-known textbook there are important articles on dysentery, abscess of the liver, leishmaniasis, fevers of short duration, and other subjects.

Professor MANTEUFEL deals with the *cosmopolitan diseases* as they occur in the Tropics. The article is a thoroughly practical one and deserves careful study. Like others, he has found that the Widal reaction in enteric fever is quite often negative in hot countries, although the diagnosis is positively established by blood culture. There is a very good section on the prophylaxis of this disease, and this is not a mere counsel of perfection. The author gives striking figures showing the efficacy of anti-typhoid vaccination in the German army during the war. In the description of smallpox Professor MANTEUFEL refers to the frequency of more than one attack, and to the fact that pock-marked persons can be vaccinated successfully more often in the Tropics than in temperate climates; this must be the experience of all who have to vaccinate large bodies of men. In discussing the differential diagnosis of syphilis and yaws, the writer mentions the dermatrope and neurotrope varieties of syphilis of LEVADITI. When inoculated into animals the latter produces a more superficial ulcer than the former; this reminds one of the difference between the primary affections of framboesia and syphilis. It might account also, to some extent, for the relative infrequency of tabes and general paralysis among the natives of the Tropics. There is a useful bibliography, that is by no means confined to German publications.

The various forms of *dysentery* are described at length by Professor RUGE. He remarks on the difficulty of isolating dysentery bacilli from other than perfectly fresh stools, and he considers that this may help to explain the numerous bacteria that were supposed to be the causal organisms of bacillary dysentery during the war; this seems to have been particularly the case in the German army. He quotes GAERTNER'S opinion that probably the infective agent of bacillary dysentery is unknown, and that it is, perhaps, ultramicroscopic. The sections on bacteriology, epidemiology and pathology are very thorough, and there is a good account of the symptoms, especially those of mild attacks. Treatment is rather inadequately described, and surely it is unnecessary nowadays to refer to a case of DAVIDSON'S (published in 1893) to emphasize the necessity of seeing the stools before making a diagnosis of dysentery. Professor RUGE quotes an interesting account of the almost incredible self-restraint of the German troops in East Africa: rather than drink unboiled water, the men quenched their thirst with the blood of wild animals, and even with their own urine!

The section on the epidemiology of amoebic dysentery shows how imperfect our knowledge still is of the life history of the entamoeba. The pathology of the disease is well described, and most people will agree with the author that there is no invariable and definite distinction in the character of the stools as observed by the naked eye, or in the clinical symptoms of bacillary and amoebic dysentery. *Entamoeba hartmanni* Prowazek is still figured as a distinct species: according to DOBELL, this is certainly for the most part *E. histolytica*, and partly *E. coli*.

Professor Juliano MOREIRA, of Rio de Janeiro, gives a brief survey of *tropical nervous diseases* and intoxications, which are almost the same as those of other climates.

There is an excellent article on *verruga peruviana* by Professor H. da ROCHA-LIMA; it contains a long and critical account of the etiology, with good descriptions and coloured illustrations of *Bartonella bacilliformis*, and of the intra-cellular bodies that have been found in verruga nodules. Although he is inclined to think that insect carriage is probable, he contents himself with a statement of the claims for the transmission by *Phlebotomus verrucarum*.

Professor Georg STICKER'S contribution on the *tropical fevers of short duration* is a very careful comparative study of this difficult subject. He points out very clearly the clinical differences between dengue and sandfly-fever; and says, very rightly, that, until the causal agent, or agents, have been demonstrated, it is impossible to come to a conclusive decision as to the identity or otherwise of the two diseases. Weil's disease is well considered from all aspects.

The article on *tropical liver-abscess* is by Professor Karl JUSTI; the description and illustrations of the histology of amoebic abscess of the liver are extremely good, and the choice of operation is discussed in a sound surgical spirit.

Dr. Upendranath BRAHMACHARI'S account of *kala azar* appears in the form of a translation into German by Professor Mense. The clinical symptoms are lucidly described, and there is a full and impartial discussion of the theories of transmission by the bed-bug, the flea, mosquitoes and sandflies, and of other suggested sources of infection. The question of the relationship of the herpetomonas infections of insects to leishmaniasis is also considered.

This very instructive and comprehensive volume will undoubtedly enhance the good reputation of former editions of this work. It is well produced and well illustrated, but the price is decidedly high.

H. J. Walton.